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ABSTRACT

This handbook is designed for use in workshops designed to prepare selected persons for the roles of Developing a Curriculum (DACUM) facilitator and/or coordinator. (The DACUM process is a low-cost approach to occupational analysis based on the premises that expert workers can describe their jobs better than anyone else can, any job can be effectively and sufficiently described in terms of the tasks that successful workers in that occupation perform, and all tasks have direct implication for the knowledge and attitudes that workers must have in order to perform the tasks correctly.) The first part of the guide describes the scope and aims of DACUM and the role of the DACUM coordinator. Discussed next are procedures for planning a DACUM workshop and selecting DACUM committee members. Guidelines for conducting a DACUM orientation, facilitating group interaction, and constructing a DACUM chart are set forth. Concluding the guide are instructions for verifying tasks and producing a DACUM chart. Appendixes to the guide (the bulk of the document) include a brief history of DACUM as well as various sample letters, forms, charts, and verification instruments for use in implementing a DACUM workshop. (MN)

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Leadership Training Series No. 67

DACUM HANDBOOK

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CAUTION: PLEASE NOTE

It is essential that persons planning to coordinate and/or facilitate DACUM workshops obtain appropriate training and practice BEFORE conducting an analysis. This handbook is intended as the major resource for such training. The training required to be a qualified and certified DACUM facilitator is offered periodically by the National Center for Research in Vocational Education.

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FOREWORD

This handbook was developed for use in workshops designed to prepare selected persons for the roles of DACUM facilitator and/or coordinator. DACUM is an innovative approach to occupational analysis that requires a well-qualified facilitator and committee of expert workers. Extensive experience with the DACUM process has demonstrated that the role of the facilitator is not only complex, but also is absolutely essential to obtaining a high-quality listing of the duties and tasks that define a given occupation.

The resulting occupational profile or DACUM chart serves as a research base around which new competency-based education or training programs can be developed or existing programs updated. Hence, it is essential that persons intending to coordinate and/or facilitate DACUM workshops attain appropriate training and practice before conducting an analysis. This handbook is intended as the major resource for such facilitator and coordinator training.

Many persons helped with the development of this handbook. Robert E. Norton, Senior Research and Development Specialist at the National Center for Research in Vocational Education, prepared the manuscript, using the results of a "DACUM on DACUM" workshop as an organizing frame of reference.

Mark Newton, former Director of the National Academy, and Audni Miller-Beach, former Coordinator of the Academy's Postsecondary and Adult Programs, assumed major responsibility for initiating and sponsoring the DACUM on DACUM workshop, which was held at the National Center in October 1982. Jack Harris, Director of Program and Staff Development for Stark Technical College, Canton, Ohio, provided valuable assistance in organizing the workshop. Ken Kyre of the State Board for Technical and Comprehensive Education, Columbia, South Carolina, served as workshop facilitator, and Alice Whisnant of Caldwell Community College and Technical Institute, served as recorder.

Experienced facilitators who served as members of the international committee of DACUM experts included Larry Coffin of Holland College, Charlottetown, P.E.I., Canada; F. A. "Rick" Embree of Humber College of Applied Arts and Technology, Toronto, Ontario, Canada; James B. Hamilton of the National Center; Jack Harris; Audni Miller-Beach of the National Center; Tim Nolan of Cincinnati Technical College, Cincinnati, Ohio; and Caroline Redfearn of Caldwell Community College and Technical Institute, Hudson, North Carolina.

Special recognition goes to Larry Coffin, F. A. Embree, Ken Kyre, and Tim Nolan who either wrote or submitted various materials about DACUM that served as valuable references for the author. The author also wishes to acknowledge the helpful reviews of the draft version of the handbook that were provided by Larry Coffin, F. A. Embree, Ken Kyre, and Tim Nolan of the DACUM committee, as well as by the following National Center staff members: Barbara Kline, Sandra Pritz, and Allen Wiant. The manuscript, while prepared by one person, represents the thoughts and personal experiences of many persons. If omissions or errors are noted, they are the responsibility of the author.

This list of acknowledgments would not be complete unless the work of Robert E. Adams was also recognized. As one of the major developers of and writers on DACUM, he more than any other could be labelled as the "originator" of DACUM. The work of William E. Sinnett also deserves mention, as does the DACUM training and promotion work done by Larry Coffin and others at Holland College.

Credit goes to the National Academy for Vocational Education for providing the leadership for sponsoring the development of this handbook. Thanks also goes to Shellie Schreck for processing the many words necessary to prepare the handbook and to Constance Faddis, editor.

Robert E. Taylor
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The National Center for Research
in Vocational Education

AN INTRODUCTION TO DACUM

WHAT IS DACUM?

DACUM or "Developing A Curriculum" is a relatively new and innovative approach to occupational analysis. It has proven to be a very effective method of quickly determining, at relatively low cost, the tasks that must be performed by persons employed in a given job or occupational area.

The profile chart that results from the DACUM analysis is a detailed and graphic portrayal of the duties and tasks involved in the occupation or job being studied. The DACUM analysis can be used as a basis for (1) curriculum development, (2) student counseling and recruitment, (3) training needs assessments, (4) worker performance evaluations, (5) competency test development, and (6) job descriptions.

DACUM has been successfully used to analyze occupations at the professional, technical, skilled, and semiskilled levels. DACUM operates on the following three premises:

1. Expert workers are better able to describe/define their job than anyone else.
2. Any job can be effectively and sufficiently described in terms of the tasks that successful workers in that occupation perform.
3. All tasks have direct implications for the knowledge and attitudes that workers must have in order to perform the tasks correctly.

A carefully chosen group of eight to twelve expert workers from the occupational area under consideration form the DACUM committee. Committee members are recruited directly from business, industry, or the professions. The committee works under the guidance of a facilitator for two to three days to develop the DACUM chart. Modified small-group brainstorming techniques are used to obtain the collective expertise and consensus of the committee.

Because of their current occupational expertise, committee participants do not need any advance preparation. Almost without exception, participants on DACUM committees have found the activity to be a professionally stimulating and rewarding experience.

The DACUM committee is carefully guided by the facilitator through each of the following steps:

1. Orient committee to DACUM
2. Review job or occupational area of concern
3. Identify the general areas of responsibility (duties)
4. Identify the specific tasks performed in each duty area

5. Review and refine task and duty statements
6. Sequence task and duty statements
7. Identification of entry-level tasks
8. Other options, as desired

The DACUM process usually results in the identification of 8 to 12 duties and 50 to 200 task statements that outline what a successful worker in a particular job or cluster of related jobs must be able to do. These tasks are then commonly submitted to a larger but still select group of workers and/or the immediate supervisors of such workers for verification purposes.

The tasks that are verified as important become the research base for developing modules or other units of instruction for the educational program. During the instructional development phase that follows the DACUM process, the verified tasks undergo a task analysis to determine the specific skills, knowledge, and attitudes the worker needs to perform each task. The information resulting from the task analysis is then incorporated into modules, learning guides, or other types of instructional materials for student and teacher use.

For the interested reader, a brief history of DACUM is presented in appendix A. It traces the beginning of the DACUM concept at the Clinton, Iowa Job Corps program in the late 1960s, the work done by Robert E. Adams for Nova Scotia Newstart, the work of Larry Coffin and others at Holland College, and the work by Robert E. Norton, Audni Miller-Beach, James B. Hamilton, and others at the National Center for Research in Vocational Education. A brief review of other major users in the United States is also presented.

DACUM is particularly well suited for educational institutions and training agencies that are implementing or are planning to implement competency-based education (CBE) or training programs since the first essential step in any CBE program involves the identification of the tasks (which are usually referred to as the competencies to be obtained) upon which the instructional program will be based. The reader interested in more information about CBE programs should review appendix B. For a list of terms closely associated with CBE and DACUM, see appendix C.

WHY DACUM?

The main reason for using DACUM has been the desire of many vocational educators to establish a relevant, up-to-date, and localized curriculum base for instructional programs. Clearly, a curriculum base that is soundly determined with maximum input from the businesses and industries that are going to employ the students prepared by vocational and technical education institutions is needed. To permit any secondary school, postsecondary college, or other educational agency to identify a localized research base for curriculum development, an alternative to the traditional, time-consuming, and often costly approach of occupational (job) analysis is needed. DACUM is such an alternative.

DACUM is an occupational analysis procedure that has experienced remarkable success in a relatively short period of time in both Canada and the United States. Because its structure and procedures allow occupational duty and task statements to be identified (1) effectively, (2) quickly, and (3) at a very low cost, DACUM has become closely associated with the movement toward competency-based education (CBE). In addition, the DACUM process has a number of characteristics and qualities that are greatly needed in CBE if it is to become a practical alternative to traditional vocational education.

First, it is a quick process; one that can be completed in only two to three days once committee members have been identified. Second, DACUM is certainly inexpensive when compared to the cost of traditional occupational analyses ($1,000-$2,000 will cover the cost of most DACUM workshops). Finally, the end product of a DACUM analysis, a complete competency profile of an occupation, can be favorably compared in validity with any other method. Given its present popularity and effectiveness, DACUM soon become the dominant approach to occupational analysis for vocational and technical education.

One additional benefit of DACUM is its public relations value to the educational institution or other agency doing the DACUM. Once employers understand the purpose and the process of DACUM, their first reaction is almost one of sheer shock when they realize that this school or college really wants industry to help them identify the competencies needed by workers in their field. So many employers are familiar with the "rubber stamp" role that they are so often asked to perform on ad hoc committees (and sometimes even on occupational advisory committees) that it often takes them a while to understand that this school or college is really serious about wanting industry to help determine what tasks students must be able to perform in order to make program completers valuable future employees.

Once employers understand what is to be done via DACUM and how the results will be used, it is a rare employer who will refuse to cooperate. Instead, many colleges who have used DACUM report such reactions as the following:

- Offers of equipment and supplies
- Offers of resource persons to help teach in emerging technology areas
- Requests for inservice training programs to meet local industry needs
- Increased enrollments in adult upgrading programs
- Increased support of the educational institution in a variety of ways by local business, industry, labor, and management

While the public relations value of DACUM is secondary to its main purpose, its significant, long-term impact is too important to overlook or lightly dismiss.

WHEN SHOULD DACUM BE USED?

Although the DACUM process has been used for several purposes, it is ideally suited for researching (1) the competencies that should be addressed in the development of new educational programs, (2) the competencies that should be delivered by existing educational programs, and (3) the current relevance of existing DACUM charts.

The Development of New Educational Programs

Once the need for a new instructional program has been established, DACUM can be used to quickly identify the tasks that a successful worker must be able to perform on the job. Such use of the DACUM process will ensure that the new program will be relevant if the tasks (competencies) identified in the process are used as the basis for subsequent program planning and instructional development.

Review of Existing Educational Programs

A DACUM committee can be convened to identify the competencies that should be delivered in an existing instructional program, just as it can be convened to identify the competencies for a new program. In this case, once the competencies have been carefully identified by industry experts, the existing educational program and instructional materials are examined to see if they address all the required tasks. Modifications of the educational program are then made, where necessary, to ensure current relevance of the program.

Update of Existing DACUM Charts

The third major use of the DACUM process is to review an existing occupational profile to determine if it still presents an accurate picture of the tasks performed by workers in that occupation. This type of updating may be conducted when the occupational profile is to be used for preparing job descriptions, conducting worker performance evaluations, making training needs assessments, or other noncurricular purposes. Depending on the occupational area and the amount of technological change occurring within it, it is usually necessary to conduct a DACUM-update workshop session at least once every three years. Even then, an active advisory committee will probably need to make additional changes in between the workshops in order to maintain a curriculum that is responsive to today's business, industry, and public service needs.

Special Applications

DACUM has also been successfully used in what could be called "special applications" of the basic process. For example, in cases where qualified workers could not be released for a two-day workshop, modified DACUMs in which literature reviews were used to identify all relevant duties and tasks have been conducted with reasonable success. In these cases, one day has generally been adequate for the committee to review and accept, modify, or reject each duty and task statement derived from the literature.

DACUM has also been used successfully by the National Center for Research in Vocational Education to identify the competencies required of workers when they are engaged in a specific portion of their total job. For example, vocational teachers who have been successful in implementing competency-based education have been able to identify the additional competencies needed by traditional teachers who want to convert to the CBE approach.

A similar approach has also been used to identify the additional competencies needed by vocational teachers who need to assist students in improving their basic skills and who are responsible for serving students having special or exceptional needs.

Another successful adaptation of DACUM has been its use in identifying the tasks that vocational educators (specifically, teachers, counselors, and administrators) should perform in order to implement sex-fair vocational education programs.

DACUM Quality

Although the DACUM process lends itself to a number of regular and special adaptations, two critical factors are always necessary to obtain a valid DACUM chart. The first is to assemble a committee of eight to twelve experts in the area under study, and the second is to use a trained DACUM facilitator. Without both of these, the resulting analysis is questionable, at best.

Because of the widespread concern about DACUM being conducted in a high-quality manner that ensures valid results, a "DACUM on DACUM" was conducted at the National Center for Research in Vocational Education in October, 1982 to identify the tasks required of the DACUM coordinator and facilitator. The resulting DACUM coordinator's and facilitator's profile was the research base for developing this DACUM Handbook.

A number of DACUM conventions or standards have also been established by experienced facilitators as "rules of thumb" that should always be adhered to if the process used is to be labelled a DACUM occupational analysis. The conventions are as follows:

- The coordinator/facilitator is qualified through training and practical experience
- Committee members are expert workers and immediate supervisors of such workers in about a 5:1 ratio
- Committee members participate throughout the entire workshop

- Committee members are expert workers and immediate supervisors of such workers in about a 5:1 ratio
- Committee members participate throughout the entire workshop
- Task statements abide by all of the criteria for acceptable task statements
- The same task statement appears only once
- There are 8 to 12 duty areas for most occupations
- There are six or more task statements in each duty area

THE DACUM COORDINATOR/FACILITATOR

In this handbook, the term DACUM coordinator is used to refer to the person who plans the occupational analysis process, makes the necessary preworkshop arrangements--including the selection of the committee of occupational experts--and provides for verification of the tasks. He or she may or may not facilitate the actual development of the DACUM chart, however, as somewhat different skills are required for that process.

The person who actually leads the DACUM occupational analysis workshop is referred to as the DACUM facilitator. Although the same person, if qualified, can function as both the coordinator and facilitator, these functions are usually handled by different persons. Whereas many persons can perform quite satisfactorily in the coordinator's role (i.e., carry out the preworkshop planning and arrangements and the post-workshop activities), the facilitator's job requires some special personal qualities and characteristics.

According to the "DACUM on DACUM" committee, the facilitator should exhibit the following personal traits:

- A professional image and outlook
- A sensitivity for others
- The ability to establish and maintain enthusiasm
- A sense of humor
- The ability to show empathy
- The ability to display and maintain a positive image
- Patience
- The ability to make decisions

In addition, the practical experience of the author in conducting DACUM workshops indicates that the facilitator must also possess the following characteristics:

- Skill in occupational (job) analysis procedures

- The ability to display warmth and establish rapport quickly with participants
- The ability to recognize and clarify the nuances contained in participants statements through appropriate questioning
- A high degree of sensitivity to both verbal and nonverbal communication
- The ability to motivate and encourage participants
- A willingness to assume and "act out" the role of process expert while according participants the role of content experts
- An appreciation of the value of small-group process so that participants are allowed to work things through by themselves
- Excellent listening skills and memory, since the facilitator must be able to "store" many of the participants contributions in his or her memory and be able to retrieve them as needed
- The ability to obtain consensus from the participants

The facilitator also needs to understand the DACUM process itself, because it is not a vague and unstructured affair. Although there are some alternatives and flexibility to parts of the process, it also has some definite parameters and utilizes a specific sequence.

As should now be apparent, facilitating a successful DACUM requires a multitude of skills, many of which cannot be quickly acquired. The qualities described are extremely important to successful performance as a facilitator. The process calls for more than a competent "discussion leader" or "curriculum developer."

The facilitator must establish and maintain the group's pace, balance the group's participation, clarify vague statements by probing for more details, and insist on selection of the most appropriate action verbs and task statement modifiers and nouns. The facilitator must motivate and lead the group and control the process, yet never impose content judgments or decisions on the participants.

Persons who are considering becoming a DACUM facilitator should carefully assess their personal traits and characteristics before deciding to enroll in a DACUM facilitator training program. And those responsible for helping select facilitator trainees need to keep these qualities in mind so as to enable all participants to make the best investment of their time and energy.

BEFORE THE DACUM WORKSHOP

PLANNING THE WORKSHOP

To ensure that a successful and productive DACUM workshop occurs, considerable planning must take place prior to the actual workshop. Major areas of concern in the pre-workshop planning phase are as follows: (1) securing administrative approval and support, (2) involving appropriate staff in the planning process, and (3) developing a schedule of major events and activities. Usually, the person designated as the DACUM coordinator is responsible for initiating the planning process and making the necessary arrangements, but he or she needs to involve appropriate others along the way to gain their understanding, support, and commitment to the entire process.

Secure Administrative Approval and Support

Before any DACUM workshop is planned or conducted, key personnel within the institution must be informed and, more importantly, become committed to the DACUM process. Strong administrative support is critical to its success as a curriculum development or program evaluation tool within any institution.

Although perhaps not as critical, it is also highly desirable to obtain the understanding and support of the instructional staff, vocational advisory council, and advisory committees. There should be at least general agreement as to how the occupational analyses resulting from DACUM will be used to develop new training programs or to evaluate and revise existing ones. The more committed the institution is to competency-based education and to offering relevant vocational-technical education programs, the easier it should be for DACUM to fit naturally into the institution's system for instructional program development and review.

In situations where administrative and staff support does not exist, steps must be taken to explain what DACUM is and how it can benefit the institution. In some cases, the coordinator may provide this orientation and obtain the necessary support and approval.

Information presented in the introduction and some other sections of this handbook may be used for this purpose. In other situations, it may be advisable to obtain the services of a qualified DACUM coordinator and/or facilitator from another agency to conduct orientation training sessions for concerned administrators and instructional staff.

Involve Staff in the Planning Process

Whenever a coordinator conducts activities that may affect others the way DACUM can, that person must involve, in appropriate ways, all those persons who are likely to be affected by or concerned about the resulting changes. Involvement elicits their understanding and support of the process, which is vital for any significant changes to take place as a result of DACUM. When planning a DACUM workshop for an educational institution, the coordinator should try to involve the following types of persons: (1) administrators, (2) instructional staff, (3) support personnel, and (4) advisory personnel.

Administrators. Although the specific administrators who need to be involved will vary from institution to institution, persons such as occupational deans, vocational directors, program area coordinators, staff and program development directors, and instructional development coordinators are the administrators most likely to be concerned. All of these persons should be aware of the coordinator's plans, and some of them will need to approve the time schedule, budget, personnel involved, and occupational area selected.

Instructional staff. It is obvious that if the DACUM is intended, for example, to analyze the auto mechanics trade and the current auto mechanics instructor(s) are to support that effort, they must become involved. The instructor(s) can usually be very helpful in identifying the various employers in the community who employ the type of experienced people needed for the DACUM committee. Although the instructor(s) should never serve as participants on the committee itself, they are probably the best single source for identifying potential employers and/or participants. The involvement of the instructor(s) in this identification process will enable them to play a significant role in helping to organize the committee.

Sometimes an instructor or group of instructors resist involvement in the planning process. Resistance may arise for many reasons, but usually it disappears quickly once the instructor(s) understand what DACUM is all about and how it can help them do a better job.

The occasional instructors who continue to resist the development of a DACUM chart for their area may be aware that portions of their training program are out of date, and they may fear any disclosure of this situation. Such instructors should be assured that the DACUM chart itself does not reveal, in any public way, any possible discrepancies between what is being taught and what should be. That type of analysis is left to the instructors, program development specialists, and other pertinent school personnel after the DACUM committee has gone home. In addition, there are virtually no training programs that do not become out of date at some point in our technological age; it is expected, and is why the DACUM process should be used to develop and maintain curriculum relevance.

Support personnel. Depending on the institutional situation, various support staff may need to become involved and can be very helpful in the planning process. If an institution has curriculum or instructional development specialists available, and if they are not serving as the DACUM coordinator or facilitator, they have an obvious role to play in helping to identify the program areas needing DACUM charts as well as in helping the instructors make any curricular changes suggested by the DACUM analysis.

Advisory personnel. Advisory committees and/or the institution's vocational advisory council are also usually involved, first in deciding what occupational area(s) should be selected for the occupational analysis, and second in identifying employers who hire the type of experienced people needed. The occupational program advisory committee is usually closest to the particular industry or business of concern and can be very helpful in identifying the types and names of employers. The advisory committee should also be able to suggest the names of some of the potential participants.

Determine Size of DACUM Committee

The ideal DACUM committee is composed of eight to twelve persons, including eight to ten expert workers and two immediate supervisors of the same type of workers. The expert workers are those who perform the various job tasks of concern and are, without doubt, in the best position to explain "what they do" that makes them successful on the job. The immediate supervisors provide a "reality check" during the process, since they also know what the workers are expected to be able to do. The presence of one or two supervisors also limits the tendancy of some workers to want to "enhance" their occupation by including management or other higher-level tasks that the workers really do not perform.

Because a reasonably sized group is required to obtain fair representation of the types of workers involved in the occupation, as well as to obtain needed group interaction, a DACUM workshop should not be conducted with fewer than five members. It is best to select ten to twelve persons, so that if one or two persons cannot make it at the last minute, the committee will still be of sufficient size to function effectively.

Develop a Schedule of Events and Activities

A number of specific activities need to be planned and carried out in advance of the workshop by the staff and coordinator. The following schedule and suggested activities have proven helpful and may serve as a check to avoid forgetting something really important during the pre-workshop phase.

Sixty to ninety days prior to the DACUM workshop, do the following:

- Decide on the job or occupational area to be analyzed.
- Establish dates for the actual workshop (experience indicates that two full days are needed to analyze most vocational and technical occupations, and two and one-half to three days are needed for professional-level occupations).
- Decide who will serve as DACUM facilitator and confirm dates and other arrangements. This is one of the most important decisions to be made. The essential point is that the individual selected should be well qualified for the task. See the section on facilitating group interactions later in this handbook for details regarding the skills and personal characteristics needed.

- Decide who will coordinate local planning and arrangements. In most cases, the coordinator will initiate and confirm all necessary arrangements, although others may assist, if desired.
- Prepare a general written description of the job or occupational area to be analyzed. This is needed to guide the selection of participants and for the orientation of participants.

Thirty to sixty days prior to the workshop, do the following:

- Complete the identification of employers who are able and willing to release expert workers and/or supervisors.
- Prepare or adapt a brief written explanation of DACUM to share with employers and prospective participants (see appendix D).
- Make appointments by phone and, if possible, arrange to visit companies/businesses/agencies personally to explain DACUM and to request their cooperation in the identification and release of expert workers. A second option, when time or travel funds are not available for personal visits, is to make only telephone contacts to explain everything. A third option, used successfully by some institutions, is to invite all appropriate employer representatives to come to the school or college for a brief presentation about DACUM and discussion of the type of assistance needed. The telephone contact approach offers a considerable saving of time for the coordinator, as compared to the individual visits and presentations approach.
- Contact all nominees by phone (or, if possible, in person) to explain DACUM and answer possible questions.
- Make arrangments for an appropriate workshop meeting room (this is very important; recommended arrangements are discussed in detail later in this handbook).

Twenty to thirty days prior to the workshop, do the following:

- Confirm all arrangements made with DACUM participants by letter, indicating meeting location, time, directions, and so forth. Copies of these letters should also be sent to the appropriate supervisors or managers of the workers. This is also a good time to send a limited amount of visitor information (e.g., campus map, brochure of programs offered) to each participant.
- Make arrangements for coffee and/or other light refreshments, for meals, and any necessary lodging or group transportation.
- Identify someone to serve as recorder during the DACUM workshop. The recorder must be able to spell correctly, print legibly, and be willing to record messages only when directed to do so by the facilitator.

Five to ten days prior to the workshop, do the following:

- Make phone calls to DACUM participants to confirm their participation, answer questions, and so forth.

- Assemble workshop supplies (e.g., Fun-Tac, Hold-It, or other brand of non-marking putty; fifty sheets of 8 1/2" x 11" clear white paper; four packages of 5" x 8" white file cards; three or four felt-tipped pens with blue, black, and red ink; a pointer; and name placards for all committee members). Most items are available from any book or office supply store.
- Decide if observers are appropriate and, if so, extend invitations to instructors, program coordinators, administrators, advisory committee chairperson, and so forth. None of these persons should be allowed to participate in the workshop discussion, however, and the number of observers should be kept to a minimum to avoid possible distractions.
- If desired, invite an appropriate school or university administrator to welcome the DACUM participants officially at the beginning of the workshop.

The day before the workshop, do the following:

- Make a final check of room, supplies, meals, and all other arrangements.
- Meet and review plans with the DACUM facilitator.

If desired, prepare an agenda such as the following that will give participants an idea of the schedule to be observed:

SUGGESTED AGENDA
FOR TWO-DAY WORKSHOP

First Day

8:30 - 9:30	Introductions and orientation
9:30 - 11:00	Identify duty statements
11:00 - 12:00	Identify task statements for one duty area
12:00 - 1:30	Lunch Break
1:30 - 5:00	Identify task statements for three to four duty areas

Second Day

8:30 - 12:00	Complete identification of task statements
12:00 - 1:30	Lunch Break
1:30 - 3:30	Review and refine duty and task statements
3:30 - 5:00	Sequence duty and task statements, and exercise other options as desired and as time permits
5:00	Adjourn workshop

Select and Prepare Room for Workshop

Because the DACUM process depends heavily on group dynamics, there are certain features required of the room in which the workshop will be conducted.

Room. The room selected should have an unbroken wall surface of at least 30 feet and should be of sufficient size to house the participants and any observers comfortably. There should be no doors, windows, or other obstructions on the wall that will be used to construct the DACUM chart.

The room should be located in a quiet area and should be well lighted and well ventilated. The facilitator or coordinator should check the lighting and climate controls before the workshop to ensure that they are functioning properly. A committee cannot function effectively in an environment that is too hot, too cold, or too stuffy.

If observers are to be invited, the room must have easy access to and from the observers' section to avoid distracting or disrupting the committee. If the room to be used is small and lacks side or rear door accessibility, it is best to discourage observers, as their movement in and out of the room may be disruptive.

Furniture type and arrangement. To facilitate the interactions that must take place in a DACUM workshop, the participants should be comfortably seated so that they can easily see and hear each other, as well as read all items placed on the wall. The best arrangement is to seat participants in comfortable chairs behind tables that are arranged in a semicircle. The participants should actually face the wall upon which their ideas will be written and displayed; however, they must also be able to see and hear other participants. The tables serve a twofold purpose: they create a work space for the committee members and act as a barrier between them and the wall. A small table for the recorder should be located at one end of the wall. Figure 1 illustrates the desired seating arrangement.

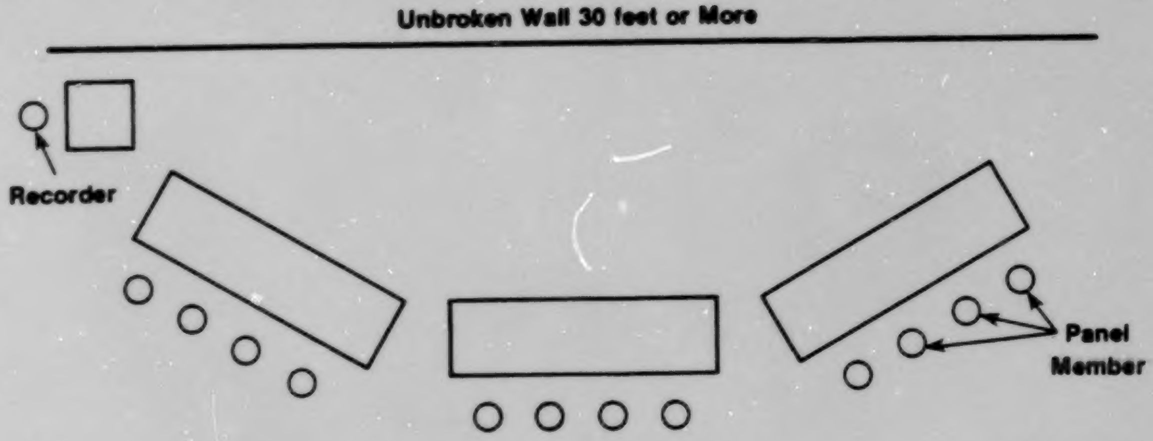

Fig. 1. Ideal DACUM seating arrangement

A refreshment table should also be set up in the rear or on one side of the meeting room. Participants should be permitted free access to the refreshments (e.g., coffee, tea, soft drinks, pastries) during breaks and throughout the workshop sessions. Figure 2 illustrates a desirable room arrangement for conducting a DACUM workshop.

Location of meeting. There are pros and cons to conducting the DACUM on the campus versus off the campus. As long as the room is conducive to group interaction and is free from distractions, the specific location is a secondary consideration. Some schools and community colleges may want to bring the committee members to the campus for public relation purposes, as well as to make it easier for other faculty and administrators to stop by and observe the proceedings. Others may prefer to use motel meeting rooms, which may offer better physical arrangements and greater convenience for lodging and meals.

Decide Whether Observers Are Appropriate

Most colleges, schools, and universities that host DACUM workshops invite faculty members, support staff, administrators, and selected others (e.g., advisory council, committee chairpersons and members) to observe all or part of the workshop. Some institutions may invite representatives of the news media to stop by, observe the proceedings, and photograph and/or interview participants during lunch or other break times. Although excellent publicity may be obtained this way, care must be exercised that observers do not interfere with the occupational analysis process itself. All observers need to be instructed politely, but firmly, that they may not ask questions during the proceedings or otherwise participate in the committee's discussions.

If the size and layout of the meeting room permit persons to observe the process without undue disruption, observers can increase their knowledge of the DACUM process through such first-hand observation. This technique has permitted many institutions to gain and strengthen the support of other instructors, supervisors, and administrators for using the DACUM procedure.

Another option is to videotape portions of the workshop. The tape can then be made available, later, for interested faculty, administrators, and board members. Because some portions of the workshop are likely to be quite repetitive, unobtrusive taping and quality editing can show the highlights of the total procedure on a thirty- to sixty-minute tape.

Plan for Follow-Up Activities

Before the workshop begins, the coordinator should consider what follow-up activities are necessary or desirable. For example, the institution may want to identify occupational experts among the DACUM participants who can also serve as subject-matter experts for a relevant training program to be developed or updated. These persons could help with the further development of the curriculum and/or be called in as industry experts for classroom or laboratory presentations.

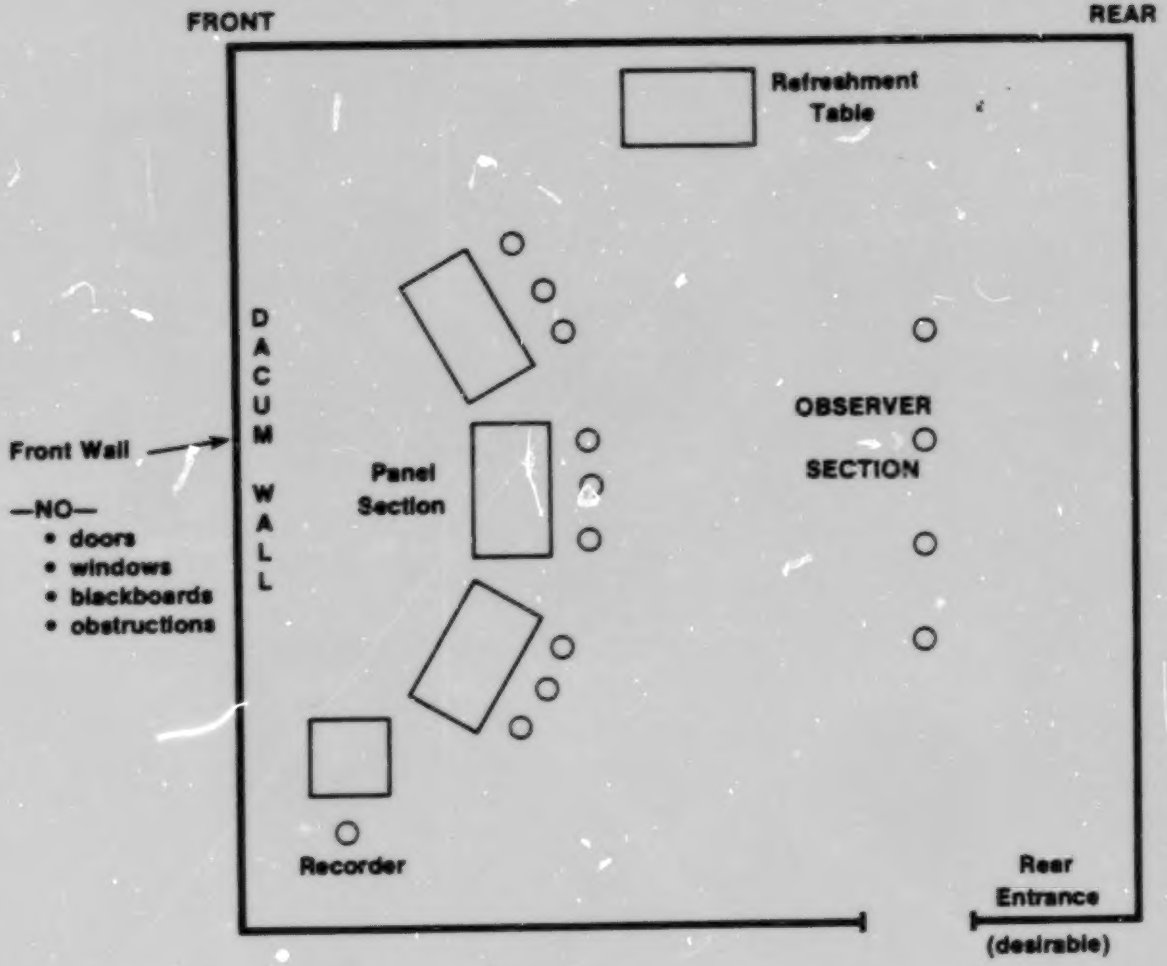
FRONT
REAR
Refreshment Table
DACUM WALL
Front Wall
—NO—
• doors
• windows
• blackboards
• obstructions
Panel Section
OBSERVER SECTION
Recorder
Rear Entrance
(desirable)

Fig. 2. Suggested room arrangement for a DACUM workshop

SOURCE: *The DACUM Coordinator: A Training Manual* developed for the South Carolina Technical Education System, Columbia, South Carolina, 1983.

Another option is to identify persons to serve either as members of a new advisory committee or as new (or replacement) members for an existing committee. If such selections are to be made, the instructor(s) and program coordinator or department head should be involved and agree to the procedure.

DACUM workshop planners should also decide whether a verification process will follow the DACUM workshop, so that the participants can be told what the next steps will be. Participants will also want to know when they can expect to receive a copy of the DACUM chart and whether the institution plans to involve them further in any way. In most cases, participants will offer to be of further assistance in any way possible.

SELECTING COMMITTEE MEMBERS

Define the Occupation to be Analyzed

Before any committee members can be identified, careful thought must be given to determining what occupation is to be analyzed. There is a danger of defining the occupation to be analyzed either too narrowly or too broadly. Defining the occupation too narrowly may result in programs whose trainees may be quite limited as to the job opportunities for which they are prepared. Defining the occupation too broadly may result in a program that requires more time than is reasonable or in trainees who receive only general preparation in a wide range of tasks. When the committee assembled for a DACUM is too diverse, the procedure tends to break down, because the members may be unfamiliar with much of the work performed by other members.

For example, an analysis of the clerical field may include persons employed as mail clerks, file clerks, receptionists, typists, secretaries, medical secretaries, legal secretaries, and administrative assistants. Although there may be similar tasks performed by persons employed in these jobs, the overall nature of the jobs varies so widely that to attempt an analysis of such a broad occupational cluster through one DACUM would be unwieldy and probably inconclusive. It would be reasonable, however, to analyze two closely related jobs, such as typist and secretary or mail clerk and file clerk, in one DACUM workshop.

When the scope is appropriate, the DACUM process may provide justification for a dicotomy or a merger of existing training programs. For example, which specific tasks separate a "legal secretary" from a "clerk-typist?" Should different curricula and training programs be developed? Which tasks are common to both jobs and which are different? Are the jobs on a parallel level with one another or is successful experience in one job a prerequisite to employment in the other? Are there enough adequate job openings for the school or college to offer training in both fields?

Since the occupational definition that is used predetermines who are the eligible participants for selection, the occupation must be defined as accurately as possible. Decisions must be made as to the types of workers to be included and excluded. Before starting the selection process, it is useful to business applications, the nature of the firms employing such workers and their various job titles.

It is also useful to develop a "working" definition of the occupation that specifies the general areas of responsibility or work functions that are to be included in the analysis. The Dictionary of Occupational Titles (DOT) and the Occupational Outlook Handbook (OOH) are valuable references for devising a three- to five-sentence working definition.

Other useful resources for devising working definitions include existing job descriptions and occupational analyses. A number of state curriculum laboratories (e.g., Ohio, Colorado) have conducted occupational analyses and published their findings. Existing sources (available at reasonable cost) that contain working definitions and occupational analyses are as follows:

CURRICULUM MATERIALS SERVICE
Vocational Education Building
Colorado State University
Fort Collins, CO 80523

DACUM EXCHANGE
Humber College of Applied
Arts & Technology
205 Humber College Blvd.
Rexdale, Ontario M9W-5L7

INSTRUCTIONAL MATERIALS LAB
The Ohio State University
154 West 12th Street, Room 139
Columbus, OH 43210

OPEN ENTRIES
The Center for Studies
in Vocational Education
Florida State University
Stone Building
Tallahassee, FL 32306

V-TECS
Curriculum Publications
Clearinghouse
Western Illinois University
46 Horrabin Hall
Macomb, IL 61455

The federally funded curriculum coordination centers (CCCs) of the National Network for Curriculum Coordination in Vocational-Technical Education supply analyses to individuals or organizations in their respective regions as well. The six CCC locations are as follows:

EAST CENTRAL CCC
Sangamon State University
Springfield, IL 62708
217-786-6375

MIDWEST CCC
1515 West Sixth Avenue
Stillwater, OK 74074
405-377-2000

NORTHEAST CCC
Rutgers University
200 Old Matawan Road
Old Bridge, NJ 08857
201-390-1191

NORTHWEST CCC
Building 17, Airdustrial Park
Olympia, WA 98504
206-753-0879

SOUTHEAST CCC
Mississippi State University
Drawer DX
Mississippi State, MS 39672
601-325-2510

WESTERN CCC
University of Hawaii at Manoa
1776 University Avenue
Honolulu, HI 96882
808-948-7834

A caveat is necessary at this point. An analysis obtained through the literature from another source should be used with caution. In some occupations, the lists may be considerably out of date. Also, unless the tasks are verified by local experts, they may or may not reflect the actual tasks performed by local workers.

A working definition can be used to guide the identification of firms employing the types of workers needed for the DACUM committee. Later, the committee can be asked to modify the working definition to more accurately reflect their actual occupational analysis. The duties or general areas of responsibility are often adapted as phrases in the final definition.

Identify Sources of Committee Members

Equipped with a working definition of the occupation to be analyzed, the DACUM coordinator is ready to begin the serious task of identifying firms that employ workers with the type of expertise needed. One of the first decisions, when beginning the identification of DACUM committee members, is to determine what geographic area should be represented.

Although some DACUMs reflect national or statewide orientation, most are based on the labor market area served by the particular community college or secondary school needing the analysis. In this sense, labor market area may be defined as that geographical region where the majority of the school's program graduates obtain jobs or are likely to obtain jobs. If a state curriculum laboratory is sponsoring the analysis, the geographic area of concern will probably be the entire state, even though some students are likely to cross state boundaries for employment purposes.

In selecting a committee, it is important to ensure that its members represent the entire region being considered. Depending on the particular occupation to be analyzed, it may also be desirable to stratify the companies by size (i.e., large, medium, small) and/or by type (i.e., private versus public) of employer, and so forth. Whenever there are one or more factors that may influence the degree of worker specialization or other aspects of the worker's job, consideration should be given to selecting a stratified sample in order to obtain proportionate representation of each category of worker in the occupation.

There are many ways to identify sources of committee members and key contact persons within the firms. Seven major sources are discussed here, although there is no reason to limit the selection process to these sources. In most cases, two or more of these sources may be used to identify the type and category of expert workers needed for the DACUM committee.

Instructor(s). Although the school instructor(s) should not be permitted to serve on the committee itself, they may be asked to help identify potential committee members. Instructors should know of many--if not most--of the firms employing the type of workers needed.

Instructors may also know contact persons within some of the firms, and even the names of some of the candidate workers. Of course, care should be taken to avoid having instructors nominate only former students or other persons who, for various reasons, do not meet the selection criteria (suggested criteria are outlined in the next section of the handbook). Involving the instructors at this point, however, is not only a good means of identifying committee members, but can also help greatly to elicit or maintain their support for the DACUM procedure.

Advisory committee. As with instructors, the members of a relevant advisory committee--particularly if the committee has been active--may be an excellent source of employers' and/or potential employees' names. The advisory committee members should also be able to give sound advice on the various types of employers hiring the workers needed and on any specializations that ought to be considered.

Former students. In cases where a relevant occupational training program has been operating for several years, one or two former students may be selected for the DACUM committee, if they meet the specified criteria. Employers of former students constitute a list of employing agencies to consider, whether or not former students are selected.

Chamber of Commerce. In most communities, the Chamber of Commerce maintains lists of various employers by occupational category. Educators are usually more than welcome to use such lists, once their purpose is made known. The names, addresses, and phone numbers of contact persons are also commonly available from this organization.

Business and industrial associations. Many (though not all) business and industrial groups form societies or associations for professional purposes. Some of these associations have business-education liaison committees whose function is to link with the schools and colleges in mutually benefical ways. Such associations are rich sources for potential committee members or of appropriate information leading to contacts with potential participants.

Yellow Pages. Although not always a comprehensive listing, the Yellow Pages of the phone directory may be a useful reference in most communities.

Public employment division. This office exists in most urban communities and is usually able to provide the names and addresses of employers they have surveyed or have listed job openings with the office.

The careful identification and (if appropriate) stratification of employers in the labor market area served by the institution may be very worthwhile in terms of the DACUM outcomes. The proper representation of expert workers and supervisors on a DACUM committee is essential to obtaining a relevant analysis of the occupation.

Criteria for Selecting Committee Members

In addition to identifying committee members who represent the geographic region and the various types of employers involved in the occupation, individual members selected for the DACUM workshop should possess several important qualifications. For the DACUM coordinator, the proper selection of these committee members is probably the most critical aspect of organizing a successful workshop. The quality of the interactions that will take place, as well as the quality of the resulting DACUM chart, depend heavily upon the persons selected. Experience suggests the following criteria to guide the selection process. A list of the criteria is shown in figure 3.

- Technical Competence
- Full-Time Employment
- Occupational Representativeness
- Ability to Communicate
- Ability to Cooperate as Team Member
- Freedom from Bias
- Full-Time Commitment

Fig. 3. Criteria for selecting committee members.

Technical competence. Anyone selected as a DACUM participant must be technically competent and perceived as an expert in the occupation to be analyzed. Individuals selected should have a high degree of skill in the occupation and should be aware of current developments and needs in the field. Keep in mind that the number of years worked is not necessarily indicative of attained competence. Generally, the immediate supervisor of the workers can help identify the best employee.

Full-time employment. Individuals selected should be currently employed in the occupation on a full-time basis. This helps ensure their knowledge of and familiarity with all aspects of the job. Some of the persons may be supervisors, as long as they are directly supervising the workers whose jobs are to be analyzed. Supervisors who have had recent practitioner-level experience in the occupation can provide useful insights into the job being analyzed and add a "reality check" to the process. However, no more than 20 percent of the committee should be supervisors.

Occupational representativeness. If the occupation is diversified in terms of worker specializations, the committee members must be selected to reflect those specializations. To the maximum extent possible, the make-up of the committee should reflect the actual employment situation in the labor market area being served.

Ability to communicate. Committee members must not only be skilled but should also possess the ability to describe verbally the tasks they perform. Some highly skilled workers are either unable or extremely reluctant to interact in a group setting. To be effective contributers, committee members must be reasonably articulate in order to explain what they do in a precise and accurate way.

Ability to cooperate as a team member. Because the DACUM process involves brainstorming and consensus seeking, the committee members must be able to listen respectfully to the views of others and participate effectively in group discussions. Members should be able to interact without dominating or being dominated and should not overreact to criticism or to having their contributions analyzed or reorganized.

Each member must also be a willing participant, one who accepts the DACUM approach to occupational analysis and who desires to participate in the process. This excludes persons who are "sent" without explanation or are simply assigned by the boss to "fill a seat" on the committee.

Freedom from bias. Committee members must be open-minded and free of biases related to training methods, training time, and trainee qualifications. This is the primary reason why instructors should *not* be committee members. Because of their concern with having to teach the tasks identified, instructors may try to influence the committee's contributions. For similar reasons, as well as the possible lack of technical competence, union leaders, personnel officers, and other managers should also be excluded.

Full-time commitment. Committee members should be able to devote full time to the DACUM workshop for the required period. It is better to select an alternate participants then to accept someone who will disrupt the process or destroy the needed continuity by being there only part of the time. It is crucial to stress the importance of being on time for all sessions, because persons who are late or are part-timers who miss some of the orientation or group discussion, may seriously disrupt the proceedings.

Summary. A good DACUM committee is representative of the best people (experts) available in that occupational field. Sometimes pressure is exerted on the coordinator to include people in top management because of the public relations value associated with their selection. Such pressures need to be firmly resisted. Experience has shown that personnel managers and other top executives make poor participants, because they are only generally aware of the competencies needed by current practitioners. The selection of managers who are poorly qualifed is likely to result in their embarrassment and thereby promote poor, rather than good, public relations.

One rule that annoys some vocational teachers is that instructors in the proposed training program are not permitted to serve on the DACUM committees, nor can they make any changes in the committee's chart when it is completed. This rule prevents an instructor from wittingly or unwittingly influencing the committee in accordance to his or her own interests and skills, or making the chart reflect the instructional resources available.

Any "weighting" of the committee that makes it unrepresentative of the occupation must be avoided. For example, selecting several recent graduates of the occupational program being analyzed would not be representative of the total occupation. Selection of the right participants is one of the keys to developing a comprehensive and valid DACUM chart.

Invite Committee Members and Confirm Their Participation

At this point, the coordinator should have defined the occupation to be analyzed, identified potential sources of committee members, and determined the criteria to be used in the selection of members. Two other major tasks must be carried out before the DACUM workshop: (1) contacting the companies that employ the type of expert workers needed, and (2) contacting the prospective committee members.

Contacting the company. A coordinator may be hesistant about contacting a company to ask if they are willing to participate in the DACUM workshop by releasing one of their best workers for two days. However, most business and industry personnel are truly interested in cooperating with vocational-technical educators when they feel the participation will be worthwhile.

The main thrust in contacting an employer should be to convince the personnel manager, supervisor, or other contact that the school needs the company's help to update or establish a relevant educational or training program. The coordinator should assure the contact person that one or more expert workers from the company or business is needed to specify the tasks that workers in that occupation perform in order to be successful on the job. The coordinator should impress upon the representative that the results of the DACUM workshop will be used by the institution to develop a curriculum and instructional program that will produce skilled workers for that company and other employers in the community.

The coordinator will not have to convince many companies of the importance of a competent work force. The more training and skills an entry-level worker possesses, the less training time and investment a company must expend.

It is important for coordinators to make an appointment by phone to visit companies, businesses, or agencies personally to explain the DACUM process and to request their cooperation in nominating and releasing one or more workers. During the visit with the employer, a coordinator should be prepared to explain the DACUM process, how the results will be used, and the qualifications of the worker or supervisor needed. Experience indicates that having a one- or two-page written explanation and a sample DACUM chart to leave with the employer can be very helpful. Coordinators should also be prepared to write formal letters of request for assistance on their institutions' letterhead paper, should the business or industry contact require formal approval.

A second option that may be used when time and/or travel funds are limited is simply to make a phone contact to the appropriate employer representative and explain everything over the phone. Although this approach has been used successfully, employers are more likely to take such requests seriously if the coordinator visits the employers on their own turf. Personal visits, of course, also permit the immediate exchange of relevant materials and a better opportunity to learn more about the firms. Personal visits may also allow for brief personal interviews with one or more prospective committee members, during which time the coordinator may be able to form an opinion as to whether the candidate(s) possess the desired characteristics.

A third option used successfully by some educational institutions is to invite employer representatives from ten to twelve companies to attend an orientation meeting on DACUM at the college or school. This approach, where suitable, offers a considerable savings to time for the coordinator when compared to the individual company visits and presentations approaches.

One approach that has usually not worked very well is the use of letters. Written requests are often referred to public relations officers who may want to be helpful but may not be well qualified to assist. These persons may lack knowledge about the assignment and may nominate themselves or other people who are not technically or personally suited for the work. If letters must be used, persons responding to the letter should be strongly encouraged to call the coordinator in order to discuss the request and type of person needed before nominating potential committee members.

Contacting the prospective committee member. The most effective strategy to obtain participants for a DACUM committee is to meet personally with each nominee, as arranged through the employer, thirty to sixty days in advance of the workshop. If there is sufficient time, this one-to-one technique elicits the best results.

A previous, third-party personal contact at the local company or industry may also be helpful; however, the coordinator's own involvement is invaluable. Persons sent to a workshop by the "boss," without any personal contact by the coordinator, often resent the assignment. Because the first contact makes the most lasting impression, the coordinator should try to arrange it him or herself or with the help of the employer.

If the coordinator must rely on third-party sources for the selection of committee members, he or she should impress upon the third-party "agents" the relevant criteria for selection of committee members. The coordinator will need to give the contacts a written copy of the criteria to guide their selection efforts. The coordinator may also want to give the contacts a letter of invitation, along with basic introductory information about the DACUM process.

Telephone contacts may have to be employed for long-distance participants and hard-to-reach people. If the coordinator's time is limited, it will probably be necessary to resort to telephone calls. A formal, written confirmation and introductory information about DACUM should follow all phone calls within the week.

Usually a letter, by itself, will not elicit a response, let alone secure a committee member. Only in combinations with other techniques will letter writing prove productive.

Prospective committee members may be hesitant to make commitments to a new or different experience. The DACUM coordinator must explain the purpose of the analysis and the role of the committee member in the process. The members should be told that they will be asked, along with other workers from the same occupation, to identify the various tasks they currently perform on the job.

Because they are performing these tasks daily, they need no special preparation for the DACUM workshop. Each person is considered an expert. Simply put, the DACUM workshop cannot succeed without the help of worker experts, because they can describe their daily performance--in terms of the duties and tasks they perform--better than anyone else.

During the explanation, the coordinator must stress the importance of the full-time commitment to the workshop. Each committee member should begin, participate throughout, and finish the entire workshop. It is important to avoid asking someone to become a committee member if he or she is really not interested in the activity. Such a person will probably not contribute much to the development of the analysis and may even be destructive to the process.

In cases where the coordinator, for whatever reason, makes contact with a worker who is qualified and willing to serve on the DACUM committee before contacting the employer, the coordinator should offer to help the worker obtain company approval. Such approval can usually be quickly obtained by getting the name, position, and phone number of the appropriate supervisor and making an explanatory phone call.

Experience has shown that if proper selection procedures are followed, few workers will object to participating. Most persons rightly consider it an honor to be selected as experts in their field and are glad to accept the responsibility, even when it means giving up some of their personal time for the activity.

To complete the selection process, it is highly recommended that the coordinator make confirming phone calls to each participant five to ten days prior to the workshop. This provides them with an opportunity to ask any questions and to confirm their plans to attend the workshop. If one or two persons must cancel out at this point, there is still time to seek qualified alternates.

Sample letters and other materials. Although the DACUM coordinator should develop his or her own letters and tailor them to the specific situation, appendix D contains sample letters of the type that should be sent to the employer and participants to confirm arrangements previously made. Also contained in appendix D are a sample DACUM information sheet and a committee member data sheet. The data sheet provides an effective means of keeping a record of all contacts with participants, and the information sheet contains adequate advance information for most persons.

Make Other Arrangements

A few other important tasks remain to be completed before the workshop begins. Although these factors may be considered secondary, they can greatly facilitate a well-conducted DACUM workshop.

Recorder. A recorder should be selected to assist the facilitator from the beginning to the end of the workshop. This person's primary function is to print the duty and task statements legibly on sheets of paper or cards that are attached to the wall. The recorder should be able to do the following:

- Listen attentively to committee members
- Take direction from the facilitator
- Print quickly and neatly
- Spell words correctly

The recorder must resist temptations to speak about or write task statements before the facilitator has obtained the consensus of the committee. The recorder may also be asked to transfer all information from the wall to sheets of paper at the end of each session and at the conclusion of the workshop.

Name tags and placards. Once the committee members have been identified, the coordinator should have a secretary prepare typed name tags with both the committee members and their companies' name on them. Name tags, when prepared in large, easily readable type, help the participants become acquainted with one another.

It is recommended that well-lettered cardboard name placards also be prepared by a graphics specialist to aid with name recognition. Request the names to be boldly printed on both sides of the folded placard so that the committee members, as well as the facilitator, can quickly identify the participants by their proper names.

During the coordinator's personal interview with or phone call to each committee member, he or she should be certain to ask what names the participants wish to be called and their spelling, if there is any doubt. Well-prepared name tags and placards can help create a favorable first impression of your organization, as well as greatly facilitate personal interaction.

Parking and security. If the workshop is held on a college or school campus, the coordinator should be sure to inform security about the dates of the workshop and the number of visitors expected. It is a good idea to ask security personnel where the visitors should park and obtain any needed parking stickers and specific directions that will avoid the embarrassment of someone becoming lost or getting a ticket. The coordinator should also be sure to arrange with both janitorial and security personnel for the overnight safety of the room and its contents. The coordinator needs to particularly stress that "NOTHING IS TO BE TOUCHED OR REMOVED FROM THE WALL."

Lunch and refreshments. It is customary for the host institution to provide for the lunches of the participants for the two days. Lunch arrangements should provide the participants with a reasonable selection of items without taking an undue amount of time. Some institutions have the lunch set up and catered in a nearby room, and others have the committee members eat in the faculty dining area, whereas still others take the group to a nearby cafeteria or restaurant. The main concern is to make certain that any necessary arrangements, transportation, reservations, payment procedures, and so forth, have been made and confirmed.

It is also customary for the host institution to provide reasonable refreshments for the participants during the two-day session. This generally means offering coffee, tea, and donuts or pastries in the mornings before the workshop begins and at the mid-morning break. For the afternoon break, the host may also wish to offer soft drinks or lemonade and perhaps cookies or other snacks.

Messages. The coordinator should alert the switchboard operator and a secretary to route phone messages to the committee members. It is preferred that a telephone not be present in the meeting room, but during breaks messages should be given to committee members. A phone should be available nearby for any essential return calls, but the coordinator should try to minimize potential disruptions of the analysis process.

Public relations. Many institutions want to maximize the positive public relations potential that can result from a DACUM workshop. Some schools and colleges work with companies to prepare joint news releases, photographs, and special reports about the DACUM workshop. If an institution employs or can hire a photographer, the coordinator may want to have pictures taken that can be sent to the participants, the cooperating companies, and to the news media. A photo of the finished chart with committee members in front of the wall has a good visual impact for many audiences.

The DACUM coordinator may contact one or more local media representatives to arrange for interviews with the participants at the workshop. If so, arrangements should be made for the second day of the workshop, and the activity should occur at lunch time or during breaks. Although media representatives may be invited to observe part of the DACUM workshop, they should not be permitted to conduct interviews or take candid, in-progress photographs that will distract the committee members during the analysis sessions. You may wish to supply the media with a list of the companies' and participants' names a few days before the workshop. See appendix E for an example of an article that has been written about DACUM workshops.

Observers. The coordinator should communicate to the appropriate institutional personnel that a DACUM workshop will be occurring. If observers are to be allowed, the coordinator must specify clearly who is invited and what procedures must be followed by those attending. It is essential that observers enter and exit as inconspicuously as possible and remain completely silent except during breaks or at mealtimes.

Official welcome. If a high-level administrator of the institution gives the official welcome to the committee members, that administrator should be briefed as to the occupational area, companies represented, time of meeting, and so forth. A welcome by a top administrator, as well as visits by other administrators, help convey to the committee the importance of their work to the institution.

DURING THE WORKSHOP

CONDUCTING THE ORIENTATION (STEP 1)

The first step in conducting any DACUM workshop is to carefully orient the persons assembled to what will be happening during the next two days. The orientation must be well done and should use a rather informal, nontechnical explanation of the procedures and concepts involved. The committee members need a straightforward explanation of several topics in order to understand clearly what their job is and how they can accomplish it by working cooperatively with the other members of the DACUM committee and the facilitator.

This section addresses each of those topics and suggests how they may be handled. A suggested outline for orienting DACUM committees, as well as copies of recommended transparency masters, are contained in appendix F.

Conduct Introductions

The normal procedure for conducting introductions is for the DACUM coordinator to call the meeting to order at the designated time and then promptly introduce the administrator or other institutional representative who is responsible for officially welcoming the committee members to the institution. Although the official welcome should be brief, it is important to have a high-level official formally greet the participants and publicly acknowledge the important contribution they will be making to the institution's vocational programs. The formal welcome should not, however, be used as a public speaking opportunity to promote the institution's programs or services.

After the official welcome, the DACUM coordinator should introduce the facilitator (assuming a different person fills this role) to the committee. The coordinator should acknowledge the skills and experiences of the facilitator that relate to conducting DACUMs. Whether the facilitator has a Ph.D. degree or not matters little and, if announced, tends to have at least a temporarily intimidating effect on some workers. The most important thing is to keep the introduction brief (practitioners are annoyed, as are most other people, by lengthy citations) and relevant to the DACUM activity.

At this point, the facilitator should take over leadership of the workshop and maintain it for the next two days. The facilitator must immediately begin to create a friendly, warm, and cooperative atmosphere. After a few words of personal greeting, the facilitator should ask all of the participants to briefly introduce themselves. Specifically, they should give their names, companies' names, current positions, and explain generally the type of work they perform or supervise daily. Introductions of this nature tend to help "break the ice," help others to pronounce each others' names correctly, and gives the participants an opportunity to tell the other members anything they feel is germane to the task at hand.

Some facilitators begin with an ice-breaker question such as, "Where would you rather be if you didn't have to be here?" or some other nonthreatening, participatory activity, but these are not necessary. The key is to select an opening procedure with which the facilitator is comfortable and that is appropriate to his or her personality and leadership style.

The facilitator should also introduce the recorder and briefly explain the nature of that person's job. It is important that the committee members know that the recorder is not one of them but is present to help the facilitator accurately record the committee's contributions.

If the program instructor(s) or coordinators are present as observers, it is appropriate to briefly introduce them in order to indicate their interest in the committee's work. This is also a good time to stress their roles as observers only.

Establish Rapport and Create a Participatory Atmosphere

After the appropriate introductions, the facilitator's major responsibility begins. The facilitator must present a concise and accurate overview of the entire DACUM process in a relaxed but forceful manner. The facilitator can "make" or "break" the participants' motivation and enthusiasm for the workshop during the first fifteen to thirty minutes of the orientation.

The facilitator must quickly establish rapport with every member of the group and motivate them to want to participate actively in the process. The facilitator should try to quickly establish a first-name relationship with the participants, and point out how each member was carefully selected as one of the local experts in his or her particular occupation. It is important for the facilitator to congratulate the members sincerely for having been selected. The facilitator should also stress the importance of the participants' individual and collective contributions to the institution, to its present and future students, and to the community.

It is crucial for the facilitator to demonstrate his or her own enthusiasm for the DACUM process and product. One approach is to discuss generally how institutions have successfully used the process to develop and update their curricula. It may be helpful to briefly highlight the history of the DACUM process at this point. The facilitator should be careful, however, that the participants do not have to listen to more than they want to or need to know. It is far more important to explain how the host institution plans to use the results of the committee's work to revise, upgrade, or expand current training programs in the occupational area of concern.

The facilitator must try to put the workers at ease and reduce possible anxieties by telling them their job is primarily one of collectively describing what tasks they perform in carrying out their jobs successfully. They should be told that once they have defined what tasks must be performed, the program administrators, instructor(s), curriculum and media specialists, and advisory committee will be responsible for deciding how the program should be taught, what instructional materials need to be developed, and so forth.

One good technique to get the committee members participating early in the orientation phase is to ask them to brainstorm the question, "How is a curriculum usually derived?" Many types of responses are likely, such as the following:

- By the teacher, based on personal experience
- By a committee of educators
- By using the "adapt-a-textbook" approach
- By using a state core curriculum guide
- By doing what the previous teacher did
- By using a traditional job analysis

The facilitator should accept and encourage a response from every member of the committee. The facilitator should also point out that, depending on the situation and constraints, all the approaches identified may have merit, but that the school really ought to be teaching "what the student most needs for successful employment" and that DACUM is a proven procedure for determining exactly what those needs are. Transparency 1 in appendix F may be used to illustrate and summarize this key point.

At this point, the facilitator may use an illustration (see transparency 2 in appendix F) to show that there are several alternative strategies for determining curriculum content. The facilitator should be sure to point out that the "occupational research" option, although considered the most objective by some persons, is also costly and time-consuming, which prohibits its use by most educational institutions.

Now is the time to start formally explaining what DACUM is. As the acronym is an unusual one, the facilitator may wish to use transparency 3 and 4 in appendix F to illustrate the derivation of the term. Transparency 5 may also be used to illustrate some of the many different types of jobs and occupations that have been successfully analyzed using the DACUM process.

Some coordinators have found it useful at this point to relate a story about how a well-intentioned training program can get out of hand without sufficient advice from industry experts. This optional DACUM story outline is given in figure 4.

State the Philosophy Behind DACUM

To gain the full cooperation of committee members, it is useful to explain the following three assumptions, which philosophically undergird the DACUM approach to occupational analysis (see transparency 6 in appendix F):

- Expert workers are better able to describe/define their own occuption than anyone else.

Example to Make a Point About DACUM

NEED: A HEAVY EQUIPMENT OPERATOR PROGRAM

FIRST YEAR

Action:
- Hired best operator they could find.
- Obtained necessary equipment.
- Provided laboratory space.

Results:
- Students spent all their time on practical, job-related tasks.
- Employers very satisfied with graduates.
- Teacher noticed other instructors had an office and classroom and he/she wanted one too.
- Space limited so part of lab went into classroom.

SECOND YEAR

Action:
- Students spent time in lab, classroom, and operating the equipment. Less time on equipment; more time spent on theory.

Results:
- Graduates still very satisfactory.
- Teacher noticed other students were getting courses in math, English, and science.
- Thought his/her students should have those too.

THIRD YEAR

Action:
- Students have heavy equipment class and lab, but have little time to practice actually operating the equipment because of other class demands on time.
- Students studied math, English, science.

Results:
- Graduates are unable to get jobs as heavy equipment operators even though they now have improved math, English, and science skills.
- Employers are dissatisfied.
- Student enrollment goes down.
- Instructor lost sight of the requirements of industry and the workers.
- Program in trouble--curriculum is no longer relevant.

NOTE: This change would more likely happen over a several-year period.

Fig. 4. Outline of optional DACUM story

- Any job can be effectively and sufficiently described in terms of the tasks successful workers in the occupation perform.
- All tasks have direct implications for the knowledge and attitudes that workers must have in order to perform the tasks correctly.

These three statements summarize, simply but clearly, the philosophy behind the DACUM system of occupational analysis. It is the second statement that is sometimes controversial. The participants need to understand and accept the logical premise that, in order to be able to perform a task correctly, a worker must know what to do when and how (knowledge), as well as understand why (attitudes) the task should be performed in the first place.

Once these assumptions are clearly understood, few participants object to the philosophy behind DACUM. The facilitator should ask the participants if they understand and accept this philosophy. If there are questions, the facilitator may need to be able to explain how the next step after occupational analysis, called task analysis, further analyzes each task statement into the specific steps or operations involved, knowledge needed, attitudes required, tools and equipment needed, and so forth.

The facilitator may also need to explain that the information resulting from the task analysis will, in turn, be used in preparing instructional materials for teachers' and students' use. Again, it is important not to tell the committee more than they want to or need to know, at this time.

Clarify the Role of the DACUM Facilitator*

Because of the critical role of the facilitator in the DACUM process, a brief overview of the role is presented here. Even though this information would not normally be discussed in great detail with the participants during orientation, it is necessary that anyone wanting to properly fulfill the role of facilitator know what general attitudes and skills are involved. Later, in the section on facilitating group interaction, a number of the more specific skills and attitudes required of the facilitator are addressed.

It is essential for the facilitator to establish his or her role clearly and thereby establish his or her credibility as the DACUM process expert, at the same time clearly acknowledging the committee members as the occupational experts. The facilitator need not know about the occupation being analyzed and, in fact, may wish to point out that it may be better that he or she does not know much about the occupation. In that way, the facilitator is less likely to interject any personal biases into the analysis process.

The facilitator's job looks simple, but it is in fact a demanding role. The DACUM facilitator's task is to guide the group through the analysis, to orient them to the process, to draw out ideas, to question each proposed task statement, to gain consensus from the group on each item, and to keep the discussion on target and the process on schedule. The facilitator does not have to be an expert in the field; in fact, it is better if he or she does not know much about the subject area. But the facilitator must be well trained in the DACUM process itself and must have great skill in group dynamics.

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*Most of this section is adapted from Adams (1975, pp. 58-59).

Because DACUM chart development is a relatively new activity and because committee members will not be familiar with its requirements, the facilitator must be able to provide the participants with a solid framework within which to operate. In time, if DACUM should be applied on a wider scale, participants may not come to the sessions unfamiliar with the process or of its demands of them. They may have opportunities to read about it or to see charts for other occupations, or may have met with colleagues who have served on another committee.

The facilitator is cast in a difficult role. He or she cannot influence the technical judgments or contributions of the committee. If the participants agree that a specific task or behavior is required for performance in their occupation, the facilitator must include it on the chart. If there is a specific arrangement of tasks, a way of subdividing the tasks, or a level of breakdown of the tasks that is satisfactory to the committee, the facilitator must agree with it. If there is terminology that may not be acceptable in educational or dictionary terms yet is widely used and is readily understandable in the field, and the committee insists that it must be used, the facilitator must agree.

Nevertheless, he or she must insist that the participants work within a specific framework. The facilitator must provide them with criteria, directions, sets of guidelines, and analogies that will help them accomplish their task.

Primarily, this must be done on the spot, because the work demands continuity and a certain momentum. The faciliator must resolve all issues, and provide all the guidance needed within the time limitation of the two days that have been allocated. The facilitator is not able to solve problems in isolation, or by getting another expert's interpretation, or by talking to other curriculum personnel. The facilitator must develop his or her skills, in advance, in order to be able to respond to situations as they occur in the workshop.

Clarify the Role of the DACUM Participants

The committee members in the DACUM process are charged with deciding what skills ought to be taught to students wanting to enter work in their field. Hence, their role is also critical to the successful development of a valid DACUM chart. Although much has already been said regarding member selection, a few additional comments about the significance of their decision-making role may be helpful at this point in the orientation process.

The role of the DACUM participant is a unique one. Individually and collectively, participants are asked to define their jobs in great detail by identifying all of the important tasks that they currently perform on the job. The participants are the experts, and it is they who must discuss, debate, and occasionally even argue about what is really important to their jobs.

Because of their critical role, the quality of the final chart depends to a great extent on the careful choice of the members of the DACUM committee, which may number a minimum of five members to a maximum of twelve (anything over that becomes unwieldy and inefficient).

These people are experts selected from the ranks of incumbent workers (eight to ten persons) in the occupation, or are direct supervisors of workers (one to two persons)--in other words, people who are on the job every day, not personnel directors, or college teachers, or textbook writers. Of course, they must be experienced, up to date, and knowledgeable individuals, but the DACUM process also requires that they be articulate and able to work in a group setting. The cost of a DACUM analysis is low, because participants (or their employers) usually donate their time for as many days as it takes.

In all decisions regarding the skills involved in the occupation, the participants must be given the authority to decide. If the DACUM facilitator tells them they are the experts and carefully listens to them as the analysis proceeds, they will accept the collective decision-making role and produce a good analysis. If, on the other hand, the facilitator says they are the experts and then proceeds to be very directive in the analysis process, he or she soon loses the cooperation and support of the committee.

Explain the DACUM Procedural Steps

At this point, the facilitator should be ready to provide an overview of the eight steps or stages of the DACUM process. The explanation should outline to the committee the job ahead and motivate them to want to get started. Detailed explanations should not be presented at this time. Rather, the facilitator should use an overhead transparency (see transparency 7 in appendix F) to briefly explain the eight steps, and should save the detailed explanations until immediately before the committee is ready to begin each step.

Step 1--Orientation of committee. The facilitator is in process of performing this step, which should be finished shortly. The goal has been to provide an introduction to the DACUM process and to explain to the participants the importance of their role in it. Emphasis should be placed on the rationale for employing this technique, which includes the fact that, in a very short period of time and with low cost, DACUM can be used to effectively identify the tasks (competencies) important to any occupation. This is a good time for the facilitator to ask if members have any questions or comments regarding the approach and the intended use of its outcomes. Questions should be fully answered and any anxieties about upcoming steps should be dispelled to the maximum extent possible.

On occasion, one or more participants may seriously question whether a satisfactory occupational analysis can be accomplished using this approach. The facilitator must assure the skeptic(s) that it has worked many times before, for many different occupations, and that with the cooperation of all committee members the job can be accomplished. As a last resort, the facilitator may need to ask one or more members to sit back and just observe the process for awhile. Experience has shown that the initial skeptic often later becomes a very significant contributor who simply does not realize at this point how effectively the DACUM process works.

Step 2--Review of occupation. The purpose of this step is to arrive at a mutually acceptable working definition of the occupation to be analyzed. Although different approaches may be used, the major purpose of this step is to clearly establish the parameters of the occupation to be analyzed. It must be made clear to everyone what related job titles and specializations are to be included in the analysis, and which ones are to be excluded, if any.

Step 3--Identify general areas of responsibility. Using a working definition of the occupation as a springboard, the third step in the process involves determining the general areas of responsibility or duties of the occupation. These statements should reflect functional areas of responsibility under which all the specific tasks will fit. Most occupations can be subdivided into from eight to twelve duty areas. These statements are written on 8 1/2" x 11" sheets of paper and placed in a vertical column on the left side of the wall, facing the committee.

Step 4--Identify specific tasks performed. The fourth step involves taking each duty area and specifying the six or more tasks that are performed by workers fulfilling duties in that area. This step takes the most time, as commonly from 50 to 200 tasks may be involved, depending on the complexity of the occupation. Each task statement must begin with an action verb and describe an observable behavior. (Note: As will be explained later in this handbook, when completing this step it would be advantageous to identify the tools and equipment important to the occupation as well as the traits and attitudes that workers should possess.)

Step 5--Review and refine task and duty statements. After specific tasks have been identified for all areas of competence, each task and duty statement is individually reviewed. This process usually results in a considerable number of changes that improves the clarity and precision of the statements. Some statements are modified and others are dropped or added. Although this process takes considerable time, it also adds immeasurably to the quality of the analysis.

Step 6--Sequence task and duty statements. After the refinement of task statements from each area of competence, the committee should organize the tasks into some logical sequence. Since most DACUM charts are developed to provide a solid basis for curriculum development, it is logical to ask the participants to organize the tasks within each area into a recommended instructional sequence, based on their knowledge of what tasks are prerequisites for performing or learning to perform other tasks.

Finally, the participants are asked to indicate their preference for sequencing the duty areas from the top to the bottom of the chart. Usually the areas that are most descriptive of or critical to the occupation are listed first.

Step 7--Identify entry-level tasks. Once the analysis of the occupation is completed and if time permits, the committee may be asked to specify which tasks on the chart are considered entry-level skills versus those which are considered advanced skills and are not expected of a beginning worker. If desired, the committee may also be asked to designate one or more specific job profiles by specifying the tasks expected, for example, of clerk-typists versus secretaries in the clerical field.

Step 8--Other options, as desired. At this point, if time permits, several additional options may be exercised. The committee may be asked to (1) refine the working definition of the occupation, (2) rate the importance of each task to the successful worker, (3) rate the difficulty of performing each, and (4) rate how frequently each task is performed. Most institutions prefer to collect some of this data later, during the competency verification process.

Review of completed charts. Although DACUM facilitators sometimes disagree on this point, it may be very beneficial at this time to distribute copies of two sample DACUM charts to serve as concrete illustrations of how completed charts look. (See appendix N for sample DACUM profile charts.) Ask the participants to note the nature and number of duties (general areas of responsibility) and how these statements are worded to encompass all the tasks included in each area.

They should also review sample task statements and be asked to note (1) that each statement begins with an action verb, (2) that usually only one verb is used, (3) the length of the skill statements, (4) that modifiers such as "effectively" and "efficiently" are assumed and therefore omitted, and (5) that the same task statement appears only once in a chart.

After the participants' review of the two sample charts, the facilitator may wish to point out some of the obvious differences between them and ask the participants if they have any questions. The facilitator should be careful to select sample charts that are of high quality and that are not closely associated with the occupation to be analyzed by the current DACUM committee.

Explain the Guidelines for Committee Operation

DACUM has been appropriately called a modified brainstorming procedure. In a true brainstorming session, evaluative and critical comments are not allowed. In DACUM, the focus should be on constructive suggestions rather then negative criticisms, especially at the beginning of the workshop. At certain points in the DACUM analysis, however, some questioning and evaluation of the various members' contributions is necessary in order to gain consensus. This is especially true during the review and refinement stage.

The following guidelines or ground rules for participants' participation have been effective and should be reviewed with any new committee (see transparency 8 in appendix F):

- Everyone should participate equally. All members of the committee have been carefully selected and are considered equally qualified.
- Members should share their ideas freely with the group. There are no right or wrong answers. Each person's ideas should be given due consideration. Members should think out loud and let other committee members help frame task statements.
- Members are encouraged to "hitchhike" on the ideas of others. Participants should give their spontaneous responses without weighing their value at that time.
- Members should focus on offering contructive suggestions rather than negative criticisms or comments. This means each member must listen carefully to the views and comments of the others.
- All task statements should be accepted as soon as consensus has been reached.
- Members should not use references of any kind. It is the members' individual and collective expertise that is wanted, not someone else's curriculum guide or journal article.
- Observers cannot participate. They should not be allowed to talk with committee members or with other observers except during meals or other break times. The instructor(s) should avoid trying to influence the participants in any way.
- All task statements must begin with an action verb and should reflect observable worker performances. Knowledge and attitudinal statements are not acceptable. When knowledge is required, there is always some task where that knowledge is applied--that is the statement that is wanted. Each statement begins with the implied (but unwritten) preface, "The individual worker must be able to . . . " (see transparency 9 in appendix F). More information about criteria for developing good task statements is provided later in the handbook. (Also see transparencies 10, 12, 13, and 14.)

Exercise Other Options as Appropriate

Once the facilitator has explained the steps in the DACUM process and the guidelines for committee operation, the orientation phase is completed and he or she may move into a review of the occupation (i.e., step 2). Before defining the occupation, however, a wise facilitator will again ask the just-oriented participants if they have any questions.

Some of the questions likely to be raised can be anticipated by experienced facilitators. This section deals with three of the most common areas of concern. It also mentions the use of a consensus-seeking exercise as an option that some facilitators believe important to use at this stage.

Role of the program developers and program instructors. It is only natural for members of the DACUM committee to want to know what will be done with the chart resulting from their work and who will be using it. Through advanced planning with the host institution, the facilitator should be able to explain generally the role of program developers (e.g., curriculum and media specialists) and instructors.

Another option that may have more credibility, especially if the facilitator is an external consultant, is to call upon the DACUM coordinator to explain the procedures the institution plans to follow. Normally, a brief explanation is all that is required or desirable at this point. Some facilitators' approach is to explain that the committee's role is to collectively answer the question of what tasks the workers must be able to perform because as expert workers they are best prepared to do that.

It is the role of the curriculum specialists and instructors to answer the other major question, how to teach, by analyzing each task to determine what knowledge, attitudes, and specific skills are involved. Following that, the program developer incorporates this information into appropriate learning activities, printed and audiovisual materials, and performance assessment devices.

Clarify terms. The facilitator must be prepared to define the terms that he or she and the participants will be using. (Appendix C is included for this purpose.) The three most troublesome terms are task, skill, and competency, because they are often used interchangeably. The facilitator should be careful not to get into a debate with one or more committee members over the fine distinctions of meaning that can be applied to these terms.

A widely understood definition of the term "task" is that it is a meaningful unit of work activity that is discrete, observable, and performed within a limited period of time. Task refers to a unit of work that must be performed, whereas skill technically refers to one's ability to perform a task or series of tasks. Competency is used to refer to the ability one must possess if they are going to be able to perform a given occupational task effectively and efficiently, whereas competence means the worker has acquired the ability to perform the work involved. Those three terms may be used interchangeabley for variety's sake during the analysis process, as long as no one makes a big issue of it.

Explain verification procedures. If a question arises about the validity of the chart being developed by the group, or about what will be done next with the chart, it is appropriate for the facilitator to explain what verification procedures are planned and how that process could result in the modification, addition, or deletion of some task statements. It should be explained that the purpose of verification is to gain further review and assurance, by other qualified persons, that the tasks identified are really the important ones. More information about the need for verification and some of the options available are discussed in detail in a later section of this handbook.

Conduct a consensus-seeking exercise. Although some facilitators like to take a few minutes at this point to conduct a "warm-up" consensus-seeking activity, this is often unnecessary. Most committee members will have been involved in various committee assignments or have served as members of work teams, where some consensus of the group had to be obtained before work could proceed. This type of activity prolongs the orientation process and may be insulting to some persons unless very carefully handled. The facilitator must decide whether such an exercise would be valuable for a particular committee.

FACILITATING GROUP INTERACTION

Two major responsibilities must be dealt with concurrently as the next phase of the DACUM workshop begins. Immediately following the orientation to DACUM, the facilitator must simultaneously begin facilitating group interaction and constructing the DACUM chart itself.

The next section of this handbook describes in detail each of the major steps involved in constructing the DACUM chart. This section addresses the facilitator skills needed to help the participants construct the DACUM chart. Quite different skills are needed at different times in this process. A facilitator first needs a good repertoire of skills to draw upon, and secondly needs to be able to judge when to use which skill.

A DACUM facilitator must cultivate and use many interpersonal communication skills. Basically, the DACUM process requires the facilitator to guide the participation and interaction of committee members in a specific sequence through brainstorming and consensus-seeking activities. At the same time, the facilitator must enforce the basic ground rules of brainstorming and adhere to the basic principles of DACUM. DACUM is a dynamic and synergistic process, but it requires firm and knowledgeable leadership.

Because a facilitator is responsible for facilitating many small-group brainstorming sessions, the rules for productive brainstorming during a DACUM workshop are summarized here.

The facililator should do the following:

- Encourage each committee member to contribute
- Listen actively to all contributions
- Control participants who try to dominate
- Readily accept as many contributions as possible
- Avoid criticizing participants' contributions
- Verbalize contributions to ensure accuracy and clarity
- Provide frequent positive reinforcement
- Repress own biases and opinions
- Probe and encourage with questions
- Set and maintain an enthusiastic climate

The committee members should be encouraged to do the following:

- Offer contributions freely
- Share ideas among themselves
- Help one another frame statements
- Limit value judgments about the contributions of others
- Begin all task statements with an action verb
- Avoid statements about knowledge and attitudes

The following sections discuss many but not all of the skills a person needs at various times in order to function effectively as a DACUM facilitator. The committee members will be closely watching and observing the facilitator while the facilitator is observing them. The facilitator must always be patient, demonstrate confidence and enthusiasm toward the DACUM process, and exhibit sensitivity and sincerity towards the committee members. He or she must quickly establish rapport and build a trusting relationship with each committee member. The leadership style the facilitator exhibits will strongly influence the group process and outcomes of the workshop.

Use Active Listening Skills

The DACUM facilitator must be able to listen carefully and accurately. This skill requires considerable energy and ability to concentrate. The facilitator must listen to the actual words, as well as interpret subtle meanings and intentions that are often only implied. Sometimes the facilitator needs to hear what two or three committee members are saying at almost the same time. The facilitator must encourage committee members to listen to each other and should help clarify the tasks under discussion. Panel members will respect a facilitator who actively listens to them.

Interpret and Use Body Language

Many times facial expressions and other body movements say as much, if not more, than the words used by a participant. The facilitator must learn to "read" quickly what the other participants are saying when only one of them is actually talking. Frowns or looks of puzzlement from several of the committee members can quickly tell the facilitator that they either do not understand what their colleague is saying or do not agree with what is being said.

A contribution that elicits these subtle, negative reactions requires further discussion and clarification before it is added to the wall. At other times, smiles or nods of approval from several members will indicate that the contribution is a good item that can be quickly added to the chart. The facilitator should also use body language to effectively communicate his or her own approval, lack of understanding, and so forth.

Exhibit Patience

Adams (1975) says that facilitators must be "extremely patient" and that this may be the most outstanding characteristic of effective facilitators. Often, DACUM participants need to talk over and think through some competencies at considerable length. This can be frustrating to the facilitator who wants to move ahead. The participants must be given the necessary time, however, to debate the issues and arrive at their own conclusions. As Adams points out:

> By being patient, the coordinator allows the committee to realize that it has to make the decisions, it has to resolve the debates, and it has to exhibit responsibility. Frequently, because of unfamiliarity with the nature of the work, the committee will search for a solution to an immediate problem to which the coordinator may suspect that he [sic] already has the answer. He must not provide the answer but must let the committee find it. If he provides a few such answers, the committee is likely to give him the responsibility of finding others. (1975, p. 60)

If the facilitator is not careful, the committee may start relying on him or her for answers to other concerns, and the chart will become the facilitator's work rather than the committee's. As long as the committee is on task, it must be allowed--and, in fact, encouraged--to resolve its own occupational issues to the maximum extent possible.

Use Silence

Silence goes hand-in-hand with patience. When the facilitator poses a reasonable question, he or she should wait for the committee to respond. This means that the facilitator will often need to resist the temptation to help the participants out by offering hints or suggestions.

The facilitator must not allow the committee to become dependent upon him or her for answers to technical questions about their occupation. The facilitator should remind them that they are the experts. What may seem like lengthy pauses often allows the committee to reconsider important issues. Silence can be golden, and a skilled facilitator will use it appropriately.

Repress Own Biases

Sometimes there is a very fine line between wanting to assist the committee in defining skills and the facilitator's imposition of his or her own biases. Although the facilitator must probe and attempt to make definitions clear and concise, the facilitator must carefully control his or her own input. This may best be done by listening carefully and drawing upon what has been said by the participants.

If one or more tasks appear to have been overlooked, the facilitator should ask if there are not perhaps more tasks involved, but should ardently avoid any specific suggestions unless one of the participants has already mentioned it. If the committee senses that the facilitator already knows what should be on the chart and that he or she is trying to impose personal beliefs on them, the facilitator will have failed in the role. A facilitator must always remember that although he or she is the DACUM process expert, the committee members are the occupational experts.

Set and Maintain a Reasonable Pace

If the committee fails for a long period to identify any new duties or tasks, one or more members of the committee may feel that the group is hopelessly bogged down. The facilitator must set and maintain a steady work pace to avoid losing the committee's interest and cooperation.

At times the facilitator may need to briefly reorient the committee and reassure them that the process really works--that they are only in a temporary slump. A facilitator may temporarily accept some poorly worded statements just to get the "ball rolling" again. In addition, the facilitator must avoid allowing the participants to debate endlessly the worth of each statement offered.

Adams (1975) states that an effective facilitator "can stimulate a good work pace by example." If the facilitator responds immediately to statements (e.g., body language will usually indicate when there is wide acceptance) and quickly places the written statement on the wall, members tend to respond more rapidly. A facilitator may also stimulate a quicker pace by calling on members by name for tasks that they may seem to be withholding for some reason.

If everyone seems fatigued or restless, the facilitator may be well advised to suggest that the participants take a break. The facilitator should also be ever aware of the room temperature and ready to make or request climatic adjustment. No one can contribute his or her maximum in a room that is too stuffy or hot.

Lead the Discussion

As Kenny Rogers sings in The Gambler, "You got to know when to hold'em; know when to fold; know when to walk away; know when to run." As the discussion leader, the facilitator's major task is to guide and keep all members of the committee involved in a constructive manner. On occasion, different and sharply opposing views and philosophies may surface. The facilitator should allow the members to disagree without being disagreeable. Once the differences have been vented, an effective facilitator will try to elicit a compromise or at least an understanding among the committee members involved.

Frequently the facilitator will need to clarify one or more of the basic principles of DACUM and then redirect the participants back to the task at hand.

Allowing the committee to wander or vent their feelings on some issue for a short time is often useful and even allows the facilitator to be positively empathetic. Too much wandering and too many "hot" debates, however, can cause the group to lose its focus and sense of accomplishment.

In rare cases, the facilitator may have to become very directive and insist that the committee go along with him or her for a time to see what happens. In such situations, the facilitator may wish to point out that the process has always worked before and that it will work again if the participants will give it a chance. Sometimes this type of action is required when one or two vocal members begin emphasizing their concern for the lack of knowledge or tool statements and attempt to stall the process until their concern is accommodated.

Maintain Group Participation

The facilitator must promote free and nonthreatening discussions by every member of the committee. If individuals are not contributing, the facilitator must attempt to draw them out by calling on them by name or by asking for their reaction to a statement. Some members may feel their competence is not equal to that of other members of the group, and thus withdraw. The act of extracting one or two tasks or reactions from such persons fairly early in the process will do much to encourage their fuller participation throughout the workshop.

In addition to calling upon the quieter members, a facilitator may also have to politely, but firmly, control dominant members by interrupting or sometimes ignoring them. If two persons speak at about the same time, it may be useful to pick up on the message of the quieter member. Or the facilitator may say, "George, we've already heard from you, what do the rest of you think?" and proceed to call on other members by name.

A facilitator must effectively control the discussion so that the needed information can flow smoothly. Sometimes a humorous remark may be used to tell a dominating type to back off and give others a chance. Appropriate use of humor can be very therapeutic by releasing everyone's tensions.

Probe with Questions

A skilled facilitator quickly learns to follow up on member contributions by probing for clarification or further details. Probing improves the quality of the chart and encourages the committee members to share their ideas in depth.

Questions can and should be asked of individual members to cause them to expand upon their comments. "Could you say more about that?" "Is that the terminology commonly used by other workers?" "How often is that task performed or how difficult is it to perform?" The main point for the facilitator to remember here is to pose questions in a sincere and nonthreatening manner.

A facilitator may also frequently need to ask questions of the entire committee. "What other duties do successful workers perform?" "What other skills does the worker need?" "Have we specified all the tasks appropriate to this area?" "In what sequence are these tasks usually performed?" Because of the nature of the DACUM process, an effective oral questioning technique is an essential tool for any facilitator.

Summarize Messages

To ensure that a committee member's contribution has been understood, the facilitator may often need to summarize comments made by several members. The facilitator must be careful to use only the terminology and verbs suggested by the committee members. The facilitator must also be able to combine or condense ideas for the committee's reaction, even though he or she may not understand the particular tasks or processes involved.

Paraphrasing allows a facilitator to restate simply what he or she thinks has been said in order to verify that it has been understood correctly. This is helpful not only for the facilitator but also for other members of the committee, who may also be uncertain of the initial statement. This approach also allows the facilitator to check body language further to determine the amount of consensus and understanding that exists. If unfamiliar language has been used, the expressions of other committee members will probably indicate that further discussion is needed.

Sometimes, in a burst of enthusiastic response, two or more tasks will be tossed out for consideration at the same time. This type of situation can be very productive but requires the facilitator to summarize and synthesize the committee members' contributions. At other times, committee members who have listened to a rambling discourse may volunteer or be called upon to summarize, in performance terms, what has been said. The facilitator should always ask the initial contributor whether the summary is an accurate one.

Use Reinforcement Techniques

Reinforcement techniques are another of the powerful "tools" available to any DACUM facilitator. Reinforcement techniques are of two types--positive and negative--and both may be effectively used when developing DACUM charts. Examples of positive reinforcement include the following:

- Praising individual members for their contributions
- Asking an individual for his or her personal reaction to a statement or to explain a specific term or concept
- Acknowledging the participants' expertise frequently
- Acknowledging the excellent progress made
- Remembering and using first names

- Asking a person how his or her company does something
- Recalling individual members' contributions
- Demonstrating a sincere interest in the occupation

There are also occasions when some of the following negative reinforcements techniques should be used:

- Ignoring critical comments
- Selectively acknowledging only relevant contributions
- Tactfully interrupting rambling discussions
- Humorously rejecting off-the-wall remarks
- Challenging the speaker to put his or her contributions into performance terms
- Using appropriate body language to reflect disapproval
- Confronting, on some occasions, a committee member whose group behavior is counterproductive (best done on an individual basis during breaks)

Minimize Criticisms

The facilitator must be on the alert to control and stifle tendencies of some committee members to be overly critical. To stimulate brainstorming, it is important to keep criticisms to a minimum, especially during the early stages of the workshop. Later, in the review and refinement stages, the facilitator should encourage constructive criticism in order to improve the quality of the task and duty statements.

The facilitator must also avoid letting the more verbal and aggressive members of the committee set themselves up as "expert critics" who have to pass judgment on every contribution. Such performance will slow down the pace and is likely to create a strongly negative attitude on the part of the other participants, if allowed to continue.

Help Members Use Behavioral Terms

At the beginning of the brainstorming activity, a facilitator will usually have to help committee members select appropriate action verbs for the task statements. Some members will offer "knowing" rather than "doing" types of statements. The facilitator may want to share with members sample statements from other occupational areas that clearly illustrate the type of statements wanted.

The facilitator may also want to distribute to members a list of illustrative verbs or refer them to previously developed DACUM charts. The danger here is that members may become overreliant upon the charts and try adopting words or statements that are really not appropriate for their occupation.

The facilitator must be certain that any "adopted" statements are carefully evaluated by the entire committee before adding them to the wall. During the refinement stage, after hearing discussions of some tasks, the facilitator may want to offer alternative word choices to the committee members.

Resolve Conflicts

When disagreements and differences arise regarding tasks or the definition of tasks, the facilitator must resolve the conflict through compromise, if possible. The facilitator's role becomes that of a mediator who must be both firm and fair.

Disagreement will occasionally arise over choice of the best action verb or most appropriate terminology. If two members argue over their particular word choice, another member of the committee may be able to suggest wording that satisfies both. Sometimes it is best to place both definitions on adjacent cards that are marked to indicate that the definition must receive further attention.

Strong emotion can enter into the process as the members begin to claim ownership of the chart and want to see it "perfected" from their personal viewpoints. At such a time, the facilitator should remind the participants that the art of compromise is essential to DACUM committee work.

Seek Consensus

The facilitator ideally should obtain the full and complete agreement of all members of the committee on all aspects of the DACUM chart. Rarely, however, is this possible. There are many situations in which consensus is quickly achieved and others in which it is obtained only after considerable debate, if at all.

On important issues, the facilitator should encourage and allow the participants to "talk out" issues on their own. The facilitator's role, at least temporarily, is one of staying out of the controversy and merely listening attentively to all sides of the issue. The facilitator may simply need to let the conversation ramble for a time, perhaps asking an occasional question, but offering no direction.

Not infrequently, participants resolve the issue themselves and indicate that they are ready to move ahead under the facilitator's leadership. As Adams (1975) states, "Most committees need this sort of leeway at some point during the workshop."

Obtaining consensus does not mean that everyone has to be in complete agreement on all statements or issues. Some issues may only be resolved by accepting the majority's or even the minority's view. As long as one or more members can justify the importance of a new job skill that is expected of at least some workers in the occupation, most participants will go along with its inclusion on the chart. If the controversial statement is a potential task, the facilitator may suggest adding it to the chart for later evaluation by other expert workers and supervisors during the verification process.

Make Decisions

The facilitator is constantly faced with making decisions about such things as (1) whether to accept a task statement, (2) when to insist on its further clarification, (3) when to stop soliciting additional duty or task statements, (4) what duty to specify tasks for first, (5) when to move to the next duty area, and so forth.

The facilitator also needs to decide when to (1) reorient the committee, (2) use humor, (3) use positive reinforcement, and (4) question the committee's actions. At certain times, such as in selecting a duty area for which to delineate tasks, it is best to involve the committee in the decision-making process. At other times, such as in deciding to request further clarification of a task statement, the facilitator must simply decide and take the appropriate action because he or she is in charge of the process and must direct it.

Whenever real options exist, a facilitator should give the committee a choice, because it adds to his or her credibility as a democratic group process leader. Where there is only one best course of action or a quick process decision must be made, the facilitator should authoritatively but politely announce the decision and move ahead.

Store and Reintroduce Unused Contributions

A good memory is a great asset to any facilitator. It is helpful to remember who offered each statement so that should a need for clarification arise later in the review process, the facilitator knows on whom to call. He or she should also try to remember ideas that may have been brought up when working on a previous duty area but were not used because they appeared to belong in another duty area.

Because of the need to focus the committee's attention on one job duty at a time, a facilitator must not start posting cards for additional duty areas. Some facilitators make a quick note of the tasks or ask the recorder to do so, or they will permit the statement to be recorded on a card (sometimes a participant will insist) that is then posted to the left of the column of duty statements for later consideration. Often these temporarily "unused" statements reflect actual worker tasks and become a part of the finished chart.

Deal with Disruptive Participants

Occasionally, facilitators have to deal with one or more disruptive members. Perhaps the best approach is to use good common sense. An effective facilitator responds to concerns in a clear, sincere manner and a confident tone of voice. He or she should never attempt to punish or ridicule a participant, especially in front of his or her peers. At the same time, the facilitator cannot allow members to get on "hobby horses," which serve only to delay and disrupt the process. Sometimes peer pressure can be used effectively to keep a disruptive member in line.

On occasion, when one or more members feel the DACUM process simply will not work, the facilitator should ask the objector(s) to sit back and observe quietly while the rest of the committee goes ahead. Once the objectors see that the process really does work, they usually want in on the action and may thereafter become effective contributors.

Another option that may work is to declare a brief recess or rest break so as to confer with the disruptive individual privately. If a personal conference does not resolve the issue, the facilitator may, in unusual circumstances, ask the person to leave the group. The facilitator must make the separation as painless as possible, but it is important to take such drastic action if the workshop is otherwise doomed to failure.

Appendix G contains a list and discussion of twenty-four specific problems that facilitators may encounter in working with DACUM committees.

Terminate an Unproductive Workshop

Despite a facilitator's and/or coordinator's best efforts at advance planning and committee member orientation and selection, it may become necessary to terminate a workshop if a committee is unable to handle the job. This skill is one that most facilitators need at some point in time, particularly when they must rely upon other persons to select the participants. Obviously, every effort should be expended to ensure the proper selection and orientation of members so that this drastic step does not have to be taken.

It is quite possible for inappropriate persons to be selected (or sent) who, once they discover what the workshop is about, become very antagonistic or are simply unqualified to perform the analysis. As Adams (1975) points out if this happens, "There is no point in prolonging the agony." To do so only causes further alienation and frustration without helping the curriculum development effort. The chart, should one be actually produced, would lack relevance. In those circumstances, it is best to bring the committee activity to a halt and, with the approval of the institutional host (or DACUM coordinator), to disband the committee in as pleasant a manner as possible.

Summary

As Nolan points out:

> All of these skills practiced and developed separately do not make a facilitator. What this section has tried to achieve is simply to heighten your awareness that a facilitator needs

definite skills but must be flexible enough to adapt to situations. As you complete DACUM workshops, your own facilitator style will emerge. Recognize it and realize its strengths and limitations. What works with one committee may backfire in the very next workshop.

Remember to be adaptable and open to growth. Abraham Maslow captured this idea most poignantly when he said, "If the only tool you have is a hammer, you treat everything like a nail." (1983, Chapter 1)

CONSTRUCTING THE DACUM CHART

At this point the facilitator starts to apply all of his or her DACUM facilitation skills in actually constructing the DACUM chart. It is assumed that the facilitator has already oriented the committee members and has satisfactorily answered their questions about DACUM. This section begins with information on defining the occupation and its scope and proceeds step-by-step through each of the remaining stages of chart development.

Review the Occupation (Step 2)

Immediately following the orientation, a discussion and review of the occupation to be analyzed is conducted. The major purpose of this discussion is to clearly establish the parameters of the occupation to be analyzed. Everyone needs to know which jobs or occupational specialities are to be included in the analysis and which ones are to be excluded.

Although different approaches have been successfully used, one good approach is to ask the hosting institution to prepare a written description of the occupation for which it hopes to prepare students. The institution should already have determined that there is a need for training students in the given occupation, so institutional personnel should also have some idea of the scope of the occupation.

The program administrator and instructor(s) can usually prepare such a starting definition based on their knowledge of the field. Where a new vocational or technical program is proposed, the DACUM coordinator may wish to refer to the Dictionary of Occupational Titles (DOT) or the Occupational Outlook Handbook (OOH) for a beginning definition.

This definition is usually distributed to each member of the DACUM committee and the institutional representative is asked to comment on it briefly. (See appendix H for two sample definitions that have been successfully used.) The facilitator may then request committee members to identify the job titles given by their companies to individuals who work in the occupation under study. Often, different titles are used to describe basically the same job. The facilitator may also ask members to identify other job titles from their organizations that reflect related positions at higher and lower levels than the occupation being analyzed.

A chalkboard or flipchart may be used to illustrate the relationships that exist between jobs within the occupation. Some facilitators find it helpful to categorize the job titles into such major categories as professional, technical, skilled, and semiskilled.

The facilitator should not be overly concerned about the quality of the initial occupational definition, because it is likely that the committee will revise it as the DACUM process evolves. The key is to establish an acceptable working definition so that all members of the committee know what job titles are included in the analysis and, hence, what duties and tasks should be included in the occupational analysis.

Identify General Areas of Responsibility (Step 3)

Once the participants and facilitator are satisfied that they have agreed upon a working definition of the occupation, they are ready to begin identifying the broad areas of responsibility (duties) of the occupation under which all specific tasks will fit. This is where the brainstorming process really begins, and where the facilitator must provide enthusiastic leadership. The committee will, at this point, be unsure of itself and need considerable guidance.

For example, participants are likely to have difficulty distinguishing between task statements and general areas of responsibility or duty statements. The facilitator should point out that each general area of responsibility can usually be broken down into six or more task statements. The goal initially should be to get some, if not all, of the committee members' contributions on paper and up on the wall, even though the facilitator is aware that the wording will change and that some "duty" statements are likely to end up as task statements and vice versa.

The facilitator may set the stage for the committee interaction by reviewing a few basic rules of brainstorming. The committee members should be encouraged to (1) share their ideas freely with the group; (2) add to the contributions of others; and (3) avoid criticizing or evaluating any contributions initially, including their own. The facilitator should tell the committee that refinements will be made later in the process and that, at this stage, the primary goal is to solicit as many duty areas as is fitting for the occupation.

Experience has shown that eight to twelve duty areas are common for most occupations. However, the facilitator should continue to solicit contributions until the participants feel they have exhausted all the possibilities.

Near the conclusion of this phase of the analysis, the facilitator may say, "Can you think of any job tasks that would not appropriately fit under one of the duty statements already on the wall?" The existence of such job tasks suggests that another area is needed. It is helpful to ask the committee to include an action verb as part of each duty statement, as this gets the participants thinking immediately in terms of performance. Later, during editing or refinement, the action verbs can be dropped, if preferred.

It is important for the facilitator to reemphasize, several times at this stage, that the statements will be refined later. The purpose here should be to elicit from committee members, as quickly as possible, statements that represent either duty or task statements. Speed is not an end in itself, but taking too long to obtain agreement on statements this early in the process is likely to be counterproductive.

After about an hour of discussion, the facilitator should have listed on the left side of the wall, in a vertical column, most of the duty areas for the occupation. When all contributions appear to have been exhausted, he or she should review the list of statements by reading each one aloud. Then the participants should be asked if they wish to consider combining or modifying any of them. The facilitator should state again that any duty area that cannot be subdivided into six or more specific tasks should not remain as a separate duty area. Similarly, a single duty area should not be so broadly stated as to include an excessive number of tasks.

The facilitator should avoid belaboring the revision process at this point. The committee will want--and be able--to make further changes as the analysis process continues.

The sample DACUM charts contained in appendix N suggest the types of general areas of responsibility or duty statements desired. Some sample duty statements include the following:

- Perform diagnostic tests
- Maintain welding equipment
- Perform welding processes
- Service the cooling system
- Perform preventive maintenance
- Perform accounting functions
- Prepare written documents
- Continue professional development

One verb rather than two or three should be used to describe the duty area whenever possible. In the case of "Identify and select materials," the verb "identify" is really unnecessary, as one cannot "select" materials unless he or she can first identify them.

Identify Specific Tasks Performed (Step 4)

Once the duty areas have been established to the satisfaction of the committee, the facilitator should be ready to focus attention on one area that is likely to be fairly easy to delineate. Usually, the committee can suggest an area in which a number of tasks can be readily identified.

This step, like that of identifying duty areas, is also primarily a brainstorming activity. It is the major and most critical phase of the DACUM process, because specifying the tasks for each duty area results in the development of the core of the chart. It is around these tasks (which are also referred to as skills or competencies to be achieved) that the instructional program will later be structured.

During this phase, the facilitator should emphasize the need for statements that contain an action verb and that clearly reflect observable worker performances rather than knowledge or attitudes. Unacceptable statements are any that begin as follows:

- The worker should know . . .
- The worker must understand . . .
- The worker has got to appreciate . . .

If certain knowledge or attitudes are needed by the workers, there must be one or more tasks for which the knowledge or attitudes are needed. Instead of tersely rejecting a knowledge or attitude statement, however, the facilitator may respond by saying the following:

- What does the worker do with that knowledge?
- Why does the worker need to know that?
- Why is that attitude important?
- How does the worker use that attitude?

These questions usually encourage the contributor or another member of the committee to respond by saying "If the worker doesn't know theory X, he or she can't ______________." This should suggest an observable task statement. If it does not, the facilitator should permit the participants to discuss the task further, so long as they stay on the topic. He or she should also remind the committee that each task statement should begin with the unwritten preface, "The worker must be able to . . . " Frequent verbal repetition of the task being delineated may be needed to help maintain the concentration of the group.

As the committee begins to define the first duty area, it is important that the facilitator record and post task statements as quickly as possible, with a minimum of debate and negative comment. It is easy to lose a committee's commitment at this point if the members begin to perceive the DACUM procedure as unworkable.

Some facilitators have found it helpful to duplicate and distribute a list of the types of action verbs desired (see appendix I for a sample list). At this point, reference may also be made to the sample charts distributed during orientation, if the group appears to be getting bogged down. The facilitator should also remind the participants that everything is tentative at this stage, and that they should not be overly concerned about the precision of each statement. Review and refinement will occur later.

Although the committee members should not be too concerned about the quality of the task (competency) statements elicited, the facilitator must be. An effective facilitator must be an expert at writing good task statements in order to guide the committee. Probably the most difficult task for most DACUM facilitators is that of clearly distinguishing between statements that reflect duties, tasks, and steps (the next subdivision). The facilitator must not only be able to make that distinction but also be able to help the committee understand the differences. This means the facilitator must also know the criteria that characterize job tasks and high-quality task statements. Criteria for job tasks and task statements are as follows:

Job tasks

- Have a definite beginning and ending point
- Can be performed over a short period of time
- Can be performed independent of other work
- Consist of two or more steps
- Can be observed and measured
- Result in a product, service, or decision

Task statements

- Reflect a meaningful unit of work
- Contain an action verb and an object that receives the action
- May contain one or more relevant qualifiers but omit qualifiers such as effectively and efficiently
- Are explicit, precise, and stand alone
- Avoid references to knowledge and attitudes needed
- Avoid references to tools or equipment that merely support task performance
- Represent a typical job assignment for which an employer or customer would pay

The better the statements are that the participants contribute as the process moves ahead, the less time will be required in the review and refinement stage. (For a brief and illustrative narrative on developing good task statements, see appendix I.)

While delineating a duty area, participants sometimes want to suggest tasks for other areas as well. This tendency should be resisted; trying to focus on more than one duty area at a time causes the analysis process to break down. Similarly, a group will sometimes want to organize or resequence the task statements during the initial brainstorming session. The facilitator should remind them that intense review and sequencing will occur later on, after all the tasks have been identified. If a specific process is being delineated, however, it may be useful to tentatively arrange the tasks in order to assist the flow of ideas.

During the initial phase of identifying tasks, the facilitator should again solicit contributions from each member of the committee. The longer a facilitator waits to draw out a quiet member, the more difficult it may become. Reluctant members can usually be drawn out by calling on them in a nonthreatening way or by asking them to react to how a specific task is performed in their company.

It is essential, during this early stage, that the facilitator also control the more vocal members of the committee to prevent them from dominating it. Appropriate verbal or body language may be used to ask a participant to "cool it," or the facilitator may refuse to accept more contributions from that person until after others have contributed.

A concern often arises over the specification of tasks related to the tools and equipment of the trade. Generally, tools or equipment operation should be included as statements only when they reflect actual occupational tasks. The committee should be instructed to think about whether completion of an occupational task involves using a tool or whether the tool is used as a means to an end.

For example, a secretary is frequently responsible for assembling or collating printed materials, but rarely is responsible for operating a collating machine. Likewise, an auto mechanic may use several tools when performing the occupational task of "adjust a carburetor." The mechanic's use of a screwdriver and other wrenches in the process does not represent occupational tasks by themselves.

At some point during the identification of the specific tasks it may be desirable to stop task identification temporarily and specify (1) the major tools and equipment used in the occupation, and (2) the worker traits and attitudes desired. It is very important to keep the tools and traits listed separate from the actual job tasks if a high-quality job analysis is to be obtained.

Both tools and worker traits usually can be specified in ten to fifteen minutes. List them separately from the job tasks. The tool and attitude lists should not be stated in actual verb and object form. Identifying tools used and attitudes desired serves as reminders to bring to mind tasks that might otherwise be overlooked.

Worker traits and attitudes often identified include: patience, perseverance, innovative, reliable, tactful, flexible, loyal, enthusiastic, optimistic, cooperative, and self-confident. Tools and equipment used will vary widely depending upon the type of job being analyzed. Care should be taken to avoid listing brand name tools and equipment.

When the participants appear to have exhausted all of the tasks for one duty, the facilitator should ask if they are ready to move to another. It is important for the facilitator to be careful not to cut them off too soon, and the facilitator should not call for a break in the middle of discussing a duty area. The facilitator must try to guide the committee in selecting another duty area in which the tasks are likely to be similar to the first band. The committee may bog down when it switches from procedural tasks to analytical or problem-solving tasks. The facilitator may need to help the committee find appropriate types of performance statements for the new area.

This process is continued until the group has delineated all duty areas. Because this stage of the DACUM workshop always takes the most time, it can tax everyone's endurance, patience, and adherence to the process. The facilitator must be enthusiastic and maintain control of the group, but should also attempt to interject humor and laughter into the process. As long as the facilitator remains highly motivated and dedicated to the task, the committee is likely to remain so, as well.

Many facilitators have found the following tips for developing good tasks statements helpful:

- Keep statements precise and short.
- Each statement should stand alone.
- Use terminology, common to the occupation.
- Avoid use of double verbs, such as "remove and repair." Use the more inclusive of the two.
- Avoid statements about the knowledge needed.
- Avoid use of unnecessary and flowery modifiers such as correctly, accurately, etc.
- Avoid the use of equipment or tools statements that merely support task performance. The use of tools in and of themselves is not a task activity, but a means to achieving the work task.
- Avoid statements about worker traits and attitudes.
- Include only one task in a single statement.

Review and Refine Task and Duty Statements (Step 5)

Once all the tasks for each duty area have been specified, the facilitator should conduct an intensive review of each task statement on the chart. The goal at this point is to improve the overall quality of the chart. The skill of the committee members to identify worker tasks accurately and precisely should have continued to improve as they advance from duty area to duty area. The facilitator may now capitalize on this expertise by reviewing each statement and refining those that need improvement. No sequencing should be done at this time, however. The committee should be permitted to add any new tasks found missing or to delete or reword tasks that overlap one another.

The facilitator should normally begin by reviewing the tasks, area by area, in the same order as they were initially identified. A pointer works well to focus the attention of all members on the same task statement. The facilitator should repeat the statement as it is worded and ask the participants to do the following:

- Critique the action verb. Is it the most accurate descriptor of what the worker actually does?
- Review the object. Does it represent the thing or person acted upon by the worker?
- Check the modifiers or qualifiers, if any. Are the correct ones used? Are others needed? Have unnecessary modifiers, such as "effectively" and "efficiently," been omitted?

Review of the chart at this stage should result in considerable clarification and numerous word changes. New cards should be written for statements that are changed in order to keep the appearance of the chart as neat as possible. When reviewing a group of tasks, the members should be able to quickly recall what was meant earlier when the task was added to the wall. If there are questions or doubtful facial expressions in evidence when a statement is read, the committee must be encouraged to review and clarify it.

The facilitator must constantly challenge the committee to think of the most accurate and descriptive terms. For example, there are major differences between "select" and "prepare" instructional materials and between "critique" and "revise" written documents. It is important to insist on precision. The facilitator may wish to remind the participants that their names will be associated with the published chart (if that is the plan) in order to encourage them to make the definitions as precise as possible.

A few other points should be stressed. A task statement should contain as few words as possible (usually a maximum of eight) and still be completely descriptive. Often, two or three words are sufficient. Long statements tend to lack focus and do not lend themselves to chart presentation.

Although task statements may be moved from one duty area to another during refinement to obtain the best possible fit, the facilitator should not permit the same task to appear twice. Instead, the participants should arbitrarily decide on the best fit, when necessary, that describes when a competent worker should perform a necessary task.

Each duty area should consist of at least six specific task statements. If the group can specify only two or three tasks, the duty area should probably be combined with another related area. On the other hand, if a particular duty area results in the identification of a large number of tasks (e.g., fifteen to thirty), there may be justification for dividing that large area into two duty areas.

Once the tasks in each duty area have been refined, the facilitator should ask the committee if the duty statement is still an accurate description of that general area of responsibility. Sometimes the scope of the duty statements should be narrowed or broadened to reflect the specific tasks more accurately. To the extent possible, each duty statement should be inclusive of all the tasks within the area and exclusive of all the tasks specified for the other duty areas.

The facilitator's responsibility is to stimulate the participants to make any refinements that may be needed. He or she should question and challenge their statements and even propose alternative wording, but must always allow the committee to make all the technical content decisions.

Sequence the Duty and Task Statements (Step 6)

Although sequencing the task and duty statements does not take a lot of time, the results of sequencing add significantly to the quality and appearance of the final chart. Adams (1975) states:

> It is important that eventual users be able to see the finished work in some type of organized structure. Work that is not systematically organized in some fashion tends to lack credibility and seems incomplete to the viewer who is searching for structure. The intent is to enable viewers to see skills in different bands in relation to each other, to see individual skills as part of a whole, and to see chronological structure.

Before sequencing the task statements within each duty area, the facilitator should provide the committee with a rationale for sequencing them. Because a DACUM analysis is usually conducted to provide a sound basis for later curriculum and instructional development, the best rationale for sequencing is to place the tasks that workers would normally learn and use first on the job on the left side of the chart.

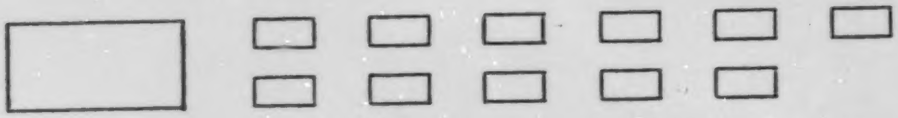
The facilitator may ask committee members to role-play the hiring of a new employee who can not perform any of the tasks on the chart. The participants should then decide, area by area, which tasks they would expect the employee to learn and practice first.

A few other factors should also be considered when sequencing the tasks. Some tasks, because they represent parts of an overall process, are performed in a natural, chronological flow and are very easy to sequence. Other tasks may involve activities that are very difficult to sequence because the order in which they are learned or performed is arbitrary. The participants should be advised to sequence such tasks arbitrarily. Sometimes they will discover two or more subsets of tasks in one category that logically follow one another.

Usually, the facilitator should select the first duty area to be sequenced. Based on his or her knowledge of what needs to be done, the facilitator can select an area in which some of the tasks are already sequenced according to the criteria or in which it appears that such sequencing may be readily accomplished. A final note regarding selection: the facilitator should not permit the participants to sequence more than one band at a time or to attempt the sequencing of one band in relationship to another.

As the actual work of sequencing tasks begins, the facilitator should try to clear a blank space the depth of two bands of skills as a work space. He or she should also place the duty area statement in the space and move the task statement cards into the space to the right of it as quickly as the participants reach a consensus regarding their preferred order.

An option here is to start with a duty area that has a clear space below it and then simply move the duty statement downward and begin placing the task statements to the right of it. If 8 1/2" x 11" sheets of paper are used for duty area statements, two rows of 5" x 8" cards containing task statements can fit beside it in those cases where twenty or more tasks have been identified for a single duty.



During the task sequencing phase, the committee may discover a missing task statement, one that overlaps another, or some other need for revision to improve quality. The facilitator must not permit major changes at this point, but some revision should be allowed. Once a band of tasks has been sequenced, review it from beginning to end (left to right) to ensure final agreement before going on to the next duty area.

Once the goup has sequenced all of the task statements, the facilitator should ask the committee to study all the duty areas. The objective now is to organize the entire analysis as it will appear on the printed chart. Two factors should be considered at this point.

First, what duty area best represents and projects a positive image of the occupation? When analyzing the legal assistant occupation, for example, one group of participants felt that their work in "assisting clients" represented the most important aspect of their jobs. At the same time, the need to "coordinate office functions," even though a large number of tasks were involved, was considered least representative of their profession. Therefore, the committee requested that the "assisting clients" area appear at the top of the chart and that the "coordinate office functions" be placed at the bottom.

Second, the facilitator should suggest the vertical shifting of one or more duties adjacent to an area that has similar tasks or that logically follows the previous band. It should be noted, however, as with the task statements, that the top-to-bottom sequencing of the duty areas usually is partly an arbitrary one. Normally, any physical change in the sequence of duty areas is not made at this time; rather, it is noted by the marking preferred order on the duty statement sheets.

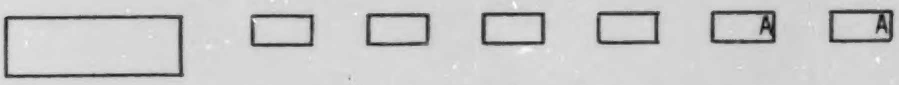
The facilitator should now be ready to obtain final agreement on whether the chart is a reasonably accurate and comprehensive description of their occupation. Normally, the participants will quickly agree that the chart is complete and will want to know how soon they can obtain a copy to show their supervisor(s) and colleagues.

It is at this point that some facilitators permit an instructor who has observed the entire analysis process to briefly address the committee before seeking final closure on the chart. The purpose is to give the instructor a last-minute opportunity to question either the omission of a task believed important or the inclusion of a task not well understood. This may be a very positive approach (and it motivates the instructor to attend and gain a personal technical skill updating from the sessions). Usually only one or two items are questioned and the instructor is very complimentary of the work the committee has done.

Identify the Entry-Level Tasks (Step 7)

Some institutions want the facilitator to ask the committee's help in identifying tasks that represent essential entry-level (i.e., beginning worker) tasks versus those that represent more advanced task that are usually learned on the job. When revising or establishing a vocational or technical education program, there is seldom enough time available to address all the occupational tasks that one may need. Some of the less important or less frequently used tasks may, therefore, legitimately be deferred and addressed later through on-the-job training or through advanced courses.

To identify what may be called the essential entry-level tasks, the committee should review the task statements listed in each duty area. Using a colored marker, the facilitator should place an "A" or some other marking on those cards which the majority of the members feel represent advanced-level tasks. Normally, if the sequencing in the previous step is well done, this will take very little time, because the advanced-level tasks should be located at the right end of each band.



Another option, if desired (or if time does not permit completion of this step during the workshop), is to question expert workers and supervisors about entry-level tasks during the verification process, which commonly follows the workshop.

Conduct Other Options, As Desired (Step 8)

The choice of other activities at this stage will be influenced by the amount of time available before the promised dismissal time arrives. In advance of the workshop, the facilitator should discuss with the DACUM coordinator, or other appropriate institutional representative, what options exist at this point and what their preferences are, given adequate time.

If there is time and interest, some of the following activities may be completed:

- Revise the occupational definition
- Establish job or career ladder profiles
- Ask participants to rate skills on frequency, difficulty, and/or importance

Revise the occupational definition. If the host institution plans to make further use of the initial occupational definition used in step 2, then the participants should be asked to review it again and to suggest appropriate changes that better reflect the essence of the detailed definition on the wall. A committee will frequently take the duty statements and combine them into descriptive phases that provide a good general definition of the occupation.

The facilitator may also want to ask the participants if they have a recommendation regarding the best title for the chart. Would a group of legal paraprofessionals, for example, prefer "legal assistant" or "paralegal?" In some cases the title may be obvious and the committee should not be asked to suggest a title just to be different or unique. The title should reflect the narrowness or the breath of the occupational analysis. For example, an analysis that includes two or three related jobs should be given a more encompassing title than one that includes an analysis of a single job.

On occasion, DACUM analyses have been conducted to identify a portion of a person's job (e.g., the role of the vocational teacher when implementing competency-based education). In these instances, some type of qualifying statement should be developed and added to the chart so that readers will understand the nature of the analysis and not be misled.

Establish job profiles. When an analysis by design includes two or more related job titles, the committee may be asked to specify which tasks are common to all of the job titles and which are unique to one or more of them. For example, an analysis of the clerical occupations will frequently include both typists and secretaries. Specifying the tasks common to both and, in this case, those expected only of secretaries is useful for program development, as well as in student counseling. A simple coding system, such as C = common core, T = typist, and S = secretary, can be quickly applied to the task statements with the help of the DACUM committee. Some institutions later color-code the task statements to reflect the various career ladders represented on a single profile chart.

Rate the tasks. If time permits and the host institution does not plan to conduct any type of task verification procedure, the facilitator may ask the committee to rate each task on one or more of the following factors: (1) importance of the task to workers in the occupation, (2) frequency with which workers normally perform the tasks, and (3) degree of difficulty most workers experience in learning or performing the task. For each type of rating desired, an apropriate scale should be devised. (For specific examples of rating scales that have been used, see the section on the verification of competencies.)

The participants may be asked individually to rate each task on each of the desired factors. Some type of easy-to-use instrument should be provided for this rating (see appendix K for a sample task rating form). The ratings of individual members are then averaged to develop a consensus rating for each task on each factor rated. A word of caution: the number of factors rated must to be kept to a minimum (i.e., no more than three) or rater fatigue may destroy the validity of the results.

If this type of rating is to be accomplished during the workshop, a third day of activity should be planned right from the start. For this reason, and because of the additional difficulty of obtaining expert workers for three days, it is strongly recommended that, whenever possible, ratings of the tasks be obtained through a mailed verification instrument process.

Workshop evaluation. Many host institutions and most facilitators ask participants to evaluate the workshop activities and to offer comments regarding their reactions to the DACUM process. This type of process evaluation can help both the facilitator and the host institution plan even more effectively for future workshops. Comments that evaluate the DACUM process as a procedure for identifying tasks important for vocational instruction are usually very positive and provide useful data to share with concerned administrators and/or sponsors. A sample instrument that has been used for this evaluation purpose is presented in appendix J.

Workshop Summary

Once the committee's work is finished, the facilitator should sincerely thank the members for their cooperation and persistence. He or she should reemphasize the importance of the participants' contribution to the institution's training efforts. Letters of thanks and a copy of the published chart should be sent to each member of the committee soon after the workshop. Letters of thanks should also be sent to company contact persons and/or chief executive officers.

Some institutions, wanting to express their gratitude to committee members for their time and energies, award certificates of appreciation to each member. An appropriate administrator or other representative of the institution should award these certificates, if desired.

Depending on the situation, this same institutional representative may indicate the school's desire for continued cooperation in one or more ways. Some committee members may volunteer to serve on an advisory committee, for example, or to work with the instructors and curriculum development specialists as technical content experts. Frequently, strong bonds of cooperation develop among the committee members, their firms, and the host institution. Such linkages may greatly enhance the institution's ability to provide relevant services to its students as well as to the business and industrial community.

Workshop Follow-Up

As soon as the participants have departed, the facilitator should supervise the numbering and lettering of the DACUM chart to ensure the preservation of its final structure. A simple but very workable procedure is to label each duty area from top to bottom with capital letters: A, B, C, and so forth. Then label each individual task in each duty area sequentially from left to right: A-1, A-2, A-3; B-1, B-2, B-3, and so on. Finally, the facilitator should remove each duty area and its associated tasks and stack them in proper sequence for later typing. The original work should be filed in a secure place at least until such time that a typed copy of the DACUM profile chart has been prepared and the copy has been carefully proofread.

If identified during the workshop, the list of tools and equipment needed, as well as the list of desirable worker traits and attitudes, should be recorded for future reference and use during the verification and curriculum development stages that usually follow a DACUM analysis.

AFTER THE WORKSHOP

VERIFYING THE TASKS (COMPETENCIES)

After the DACUM workshops, the institution has an occupational analysis listing all of the tasks workers perform in that occupation. It was obtained from an unimpeachable source--expert workers and supervisors. It would appear that the institution is now ready to have the DACUM chart laminated in plastic and declared an official document of that vocational program. That may not be true, however. The tentative task list most likely should be subjected to further verification by other experts.

Determine the Need for Verification

"Verifying" the tasks is a process that confirms that the tasks listed are, in fact, the tasks that students will need to be able to do when they enter the occupation locally. The tasks should be submitted to people currently active in the occupation for their critical examination, and they should be asked to consider each item and determine whether that item is, or is not, actually a part of the occupation. They may also suggest additional tasks that appear, in their opinion, to have been omitted.

There are a number of reasons why it may be useful to verify a DACUM task list. For instance, the tasks students are required to achieve may be affected by local codes or regulations. There may be special practices, tools, or equipment used by the industrial firms or businesses in which the students become employed. Union agreements in the area may determine which craft does what tasks. These kinds of considerations can be clarified if the task list is scrutinized by people in the occupation who know local conditions, job requirements, and the latest occupational trends.

There are two schools of thought as to whether occupational analyses done by the DACUM approach need to be verified by another group. One school of thought (Holland College is an example) holds that further verification serves no useful purpose because the original DACUM committee itself was selected from specially qualified local or regional practitioners. Subjecting the chart to review and possible change by others would only make the work of the committee seem less important, increase costs, and add little.

The other school of thought contends that there are inherent risks in adopting the DACUM results without further input. A DACUM committee is small and may not be representative of the occupation. In addition, the public relations value of having a larger number of qualified workers and supervisors review the analysis is lost. Greater confidence that the tasks identified are, in fact, the really important ones may be gained by having other experts review it for completeness and accuracy. This is especially important if the results are to be used for state or national curriculum development or instructional purposes.

In addition, other types of data, such as frequency of performance, importance of the task, and the difficulty of learning, may be obtained readily through the verification process. Each institution has to consider the costs and benefits of verification and decide which approach will better serve its needs and desires.

Develop a Verification Strategy

If the institution decides to conduct some type of verification, a strategy for carrying out the process needs to be devised. The degree of sophistication and type of verification process used can vary widely. Concerned faculty may wish to conduct a fairly comprehensive verification study for a new program, one for which there is little current information available.

For programs that are to be updated and for which considerable literature exists (i.e., other occupational analyses), it may be most appropriate to have the program's occupational advisory committees review the DACUM competencies. To structure the process, the following questions must be addressed:

- Who will conduct the verification?
- What questions will be asked?
- What instruments will be used?
- How will verifiers be identified and selected?
- How will the data be collected and analyzed?
- How will statements be modified?

The DACUM coordinator is usually the person who conducts the verification survey. This person should possess or acquire skill in developing questionnaires and in processing the resulting data. The coordinator is usually already experienced in making contacts with industry personnel and is therefore usually in a good position to identify persons qualified to serve as verifiers.

Other persons, however, who possess the necessary data collection and analysis skills may also conduct the verification. In all likelihood, three other parties will also need to be involved: (1) an administrator who can give the necessary approvals, (2) the curriculum specialists and instructors, and (3) advisory committee members. As with the identification of DACUM committee members, the latter two groups often are able to assist with the identification and selection of verifiers.

Develop Verification Instruments

When preparing a survey or task inventory instrument, the person in charge needs to consider carefully what type of information is needed. The number of questions asked must be kept to a minimum order to ensure a better rate of response. Only that information that is relevant to the institution as it proceeds to organize and develop a responsive curriculum based on the DACUM analysis should be gathered. Questions that may be asked include the following:

- Importance of the task. How important is the performance of this task in your job as a ____________?
- Frequency of performance. How frequently do you perform this task?
- Entry level. Is this task expected of a beginning worker?
- Difficulty rating. How difficult is this task to learn?
- Criticality. How critical is the performance of this task?

You may also want to ask your respondents to react to the list of tools and equipment and the list of worker attitudes and traits gathered in the DACUM workshop. Questions about the tools and equipment commonly asked follow:

- Is the item used?
- How frequently is an item used?

Questions raised about the worker traits and attitudes usually ask the verifier to rate how important the trait or attitude is to the worker in their occupation. You may also want to provide space so that the verifiers may add additional items that they believe to be important.

It is important to be reasonable. The person in charge of the verification process should not ask a lot of questions just to gather information. He or she should know exactly why the information is needed and what will be done with it. Two questions are probably best, and certainly no more than three questions should be asked about each task statement. It is necessary to develop a quality verification instrument and, if possible, pilot-test it with two or three sample respondents to make certain the directions are clear. The format of the instrument should be attractive and the reproduction quality high (i.e., print the instrument, if possible).*

Identify and Select Verifiers

Verifiers should consist of a group of expert workers in the occupation and/or the immediate supervisors of workers who have direct responsibility for getting work done. Again, no high-level administrators, personnel managers, or theoreticians should be used. The criteria for selection of the verifiers are essentially the same as for those identifying the DACUM participants. The verifiers should be persons who can accurately be labelled as experts. Unlike the participants, however, the verifiers do not have to verbalize the skills.

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*For ideas on sample formats, rating scales, and cover letters, refer to appendix K. Note that none of the questionnaires ask more than three questions about each item. Note also that directions call for the verifiers to write in any additional task statements that they feel have been omitted.

Some coordinators make a serious mistake in the selection of the verifiers by (1) mailing the questionnaire to all the known practioners in the region, or (2) using a table of random numbers to select a random sample of manageable size (twenty-five to fifty persons) for the purpose. The serious weakness of these two options is that some of the opinions received will be those of individuals who are only minimally qualified. Data from the experts are averaged in with data from those who are less qualified, resulting in inferior (or at least questionable) data for program development.

The verification process should be a local one, but the term "local" may need some definition. If an institution is training textile equipment maintenance workers and it places all its students in the three mills in town, then the related task list should be verified by workers from the immediate area--the town itself. If an agricultural training program prepares workers for tropical foliage nurseries, an industry confined to two counties in the central part of the state, those counties become the area for "local" verification. If a school has the only laser/optics program in the state, with its graduates employed over a wide geographic region, that school should verify a related task list by mailing it to expert workers in several nearby states.

Selecting a verification group need not be a major effort. A program's occupational advisory committee may be satisfactory for the job if it is composed of the right kind of people. Such experts should be involved in every step of planning for competency-based education, and DACUM chart verification is a crucial task in which they ought to be involved. If they do not participate directly in the verification, they should at least be asked to help identify firms, employees, and first-line supervisors who are qualified to be verifiers.

Collect and Analyze Data

An approach sometimes used to collect the data needed is to convene a special verification committee, solely for the purpose of reviewing the task statements. The members (ten to fifteen is a workable size) may be selected on the basis of recommendations from knowledgeable people in the occupation. The committee can be convened and put to work at a two- or three-hour meeting reviewing the tentative task list and obtaining any desired task ratings.

It is helpful to send members of the verification group a copy of the task list a few days ahead of time, so they can prepare for the discussion. It is inefficient to simply open the meeting with the general comment, "Does anyone have any suggestions for additions or deletions?" This tends to lead to haphazard discussion, with little assurance that the work will be done thoroughly and thoughtfully.

Rather, the facilitator should structure the job by reviewing the list, one area of competence at a time. Each task statement should be examined individually, and the facilitator should move the committee's attention along if there are no questions or problems. If the original task list is thoroughly developed, there should be relatively little that requires significant change, but the recommendations made by the verifiers should be addressed, and appropriate revisions made.

Probably the most efficient and most frequently used data collection procedure is the mailed questionnaire. A well-developed questionnaire may be sent along with an appropriate cover letter to twenty-five workers and a like number of supervisors at a very low cost. If the verifiers are located over a wide region, the cost of a mailed survey is much less than the cost of paying the travel and per diem expenses of persons attending a group meeting. Also, persons completing a questionnaire can do so at a time most convenient to them, without missing any work.

The questionnaires may be mailed to the group of workers, and nonrespondents should then be reminded with a follow-up letter or telephone call. The cost of this approach includes the printing of the instrument, the postage, telephone charges, and secretarial services.

If verification is done through interview/observation techniques, the facilitator must prepare interviewers, write introductions to employers, and free sufficient staff time to conduct the interviews. This approach is probably too costly for most institutions to seriously consider.

Regardless of the means used to collect the data, the data must be tabulated and analyzed. The usual procedure for verification of data, since relatively small numbers of responses are typically involved, is to manually tabulate the frequency of each type response and then convert the frequencies to a mean score. For an example of this type of summary, see the Industrial Mechanics Survey Summary in appendix K.

Use Data to Modify the Analysis

Once the data have been summarized, they should be carefully interpreted to see what changes are needed in the tentative task listing. Sometimes respondents will point out one or two tasks that somehow were missed by the DACUM committee. Comments made by several reviewers may also suggest that a few statements need some modification to clarify their meaning. Changes of this nature require that the program developers or instructors make good professional judgments.

The program developer may want to phone one or two of the DACUM committee members to review the changes believed desirable. The program advisory committee may also be consulted regarding proposed changes.

Data obtained from the ratings may be used to help the instructor and developers determine what tasks represent entry-level tasks that "must be taught." These include tasks rated as very important, needed by entry-level workers, and frequently performed. Tasks ranked as not needed by most entry-level workers should be excluded from most training programs.

A number of tasks will probably fall in the "should be taught" category. These include tasks ranked as being of average importance and occasionally performed. Arbitrary cut off points can be established and used to guide the selection of tasks to be addressed in developing the curriculum materials and designing the training effort.

Regardless of the data collected, some hard professional judgments must be made, probably with the help of the advisory committee. The process of developing a valid list of tasks is demanding, no matter how it is done. That is probably why it often fails to get the time and attention it requires. However, nothing is more crucial to the worth and the success of a competency-based vocational program. Once the tasks for an occupational program are verified, an institution has a solid research base on which to build an effective vocational training program.

PRODUCING THE DACUM CHART

Once the task are verified, a DACUM chart may be laminated in plastic, at least for a while. At this stage, however, a few important details still need attention if the DACUM chart is to be used most effectively.

Code Task Statements

For easy reference to a particular task statement, most institutions code each duty and task statement, using either a numbering and/or lettering system. These codes are then used to label file boxes containing instructional materials for a particular task, as well as to label learning guides, modules, media, performance checklists, and so forth.

Any coding system should be simple to use and understand and should allow the labeling of each duty area and each individual task. The National Center for Research in Vocational Education and many American community colleges have employed a code combining capital letters and Arabic numbers. Capital letters are assigned in alphabetical order to each duty area (e.g., A, B, C, D) and letters and numbers are assigned to each individual task in each duty area (e.g., A-1, A-2, A-3, B-1, B-2, B-3). Appendix N offers examples of this type of labeling.

A number of Canadian educational agencies employ a two-digit code for the duty areas (e.g., 01, 02, 03, 04) and use the same double-digit system for each of the individual tasks (e.g., 01-01, 01-02, 01-03, 02-01, 02-02, 02-03).

Determine the Chart Format

There is a lot of truth to the adages that "first impressions are important" and that "a picture is worth a thousand words." Such is certainly the case with a DACUM occupational profile chart. An institution should review the many types of formats available and then take the time to devise an excellent format for its use. See appendix N for several examples.

The physical layout and appearance of the format adopted can do much to create a favorable impression on those who use the chart. And, since the DACUM profile chart lends itself to many uses, many influential people (as well as the program's students) are likely to see it. It is highly recommended that an institution first decide what information should be on its DACUM profiles, and then employ a graphic artist to develop one or more designs for final approval. Once prepared and adopted, of course, the same format may be used for all the institution's occupational programs.

Perhaps the biggest question in determining the chart format is, "What information should be included?" But there are several options. The following types of information should be considered essential:

- Institution's name
- Occupational title
- Date of development

The following types of information may be considered highly desirable:

- Names of DACUM committee members
- Names of cooperating businesses and industries
- Name(s) of DACUM coordinator/facilitator
- Institutional logo
- Student and instructor identification spaces

Some institutions also prepare a special cover drawing to reflect the occupational area of concern. Others, such as Holland College, design their profile chart to serve also as a "Record of Achievement" and encase them in plastic.

Supervise Production of the Chart

Once the DACUM chart format is determined, the coordinator should supervise its production to ensure that a high-quality, accurate chart is produced. The actual mechanics of typing or composing the chart will vary considerably, depending on the equipment available. Once typed, the chart must be carefully proofread and checked for accuracy against the final verified list of tasks. Any corrections needed should be expertly made or, in the case of word processing equipment, an entirely new copy produced.

If photo reduction is used, do not reduce the size of print too much to save space. Most institutions use either 11" x 17" cover stock or two or more sheets of either 8 1/2" x 11" or 8 1/2" x 14" cover stock assembled in plastic. If the budget permits or institutional facilities are available, have the chart printed rather than duplicated. Do not accept anything short of the highest quality reproduction. And be sure to print an ample supply.

Disseminate the Profile Chart

One of a DACUM coordinator's more enjoyable activities is the distribution of the printed DACUM profile charts. The final printed and verified profile should be distributed to at least the following groups, either in person or with an accompanying letter or memo:

- DACUM committee members
- Industrial contacts who helped identify and/or arrange for the release of DACUM participants
- Occupational advisory committee members
- Program instructors and curriculum development specialists
- Appropriate institutional administrators and board members
- Vocational guidance and placement personnel
- Enrolled and potential students

Numerous specific uses for the DACUM chart are briefly described in appendix L.

Also consider sharing the final chart with one or all of the follow agencies:

- DACUM Exchange
  Humber College of Applied Arts and Technology,
  205 Humber College Blvd.
  Rexdale, Ontario M9W-5L7
  Canada
  (416) 675-3111 X-553

  This international DACUM exchange has collected, stored, and distributed charts developed all over the world since 1971. The nominal price for each chart or task list is $2.50, which covers the cost of postage and duplication. After contributing to the exchange, there is no cost for reasonable requests.

- VECM Acquisitions
  National Center for Research in Vocational Education
  The Ohio State University
  1960 Kenny Road
  Columbus, OH 43210
  (800) 848-4815 or (614) 486-3655
  (or the Regional Curriculum Coordination Center for your area)

  VECM is a relatively new "vocational education curriculum materials" data-base affiliated with the National Center Clearinghouse. It is a comprehensive, centralized, and computerized source of information on both print and nonprint curricula and related materials, including task lists. Only items that have an availability source are entered into the data-base. Searches may be conducted through the state curriculum liaisons.

- Open Entries
  The Center for Studies in Vocational Education
  Florida State University
  Stone Building
  Tallahassee, FL 32306
  (904) 644-2440

Open Entries' objective is to exchange information on competency-based learning guides, modules, task lists, audiovisuals, and related staff development and support materials. Its intent is to help link, nationwide, educators involved in competency-based vocational education so that they can share materials, ideas, and experiences. A subscription to the quarterly newsletter, which contains both "want ads" and "offers" of specific materials, is $5.00 per year.

Conduct Follow-Up Activities

Depending on the institutional situation, the role of a DACUM coordinator and/or facilitator is essentially completed for the target occupation. The role may shift to involvement, however, with one or more of the follow-up activities that should occur following the dissemination of the chart. It is at this point that the coordinator and/or facilitator becomes more of a program developer or curriculum specialist, as he or she begins to work with the instructor(s) and other instructional development team members to implement the changes needed.

There is no single best way to institutionalize the use of DACUM charts. Most institutions use teams to revise their existing curricula or to develop an entirely new education or training program based on the DACUM findings.

One of the major tasks undertaken by most institutions is to conduct a task analysis; that is, to analyze each verified task in order to identify (1) the steps/activities involved, (2) the related knowledge required, (3) the attitudes involved, (4) the performance standards expected, (5) the tools and materials needed, and (6) any safety concerns. This step serves several very important purposes, one of which is to provide teachers and others with a more detailed basis for developing instructional materials.

More importantly, however, it helps the curriculum developer(s) to identify the relative "size" of the tasks (competencies) listed. No matter how carefully defined and structured the analysis process is, competencies inevitably vary in size (i.e., in the amount of time and effort required to teach or to learn that skill). By analyzing each competency, one can identify and remedy these inconsistencies. Two sample task analysis forms that have proven useful to both instructors and curriculum developers are contained, along with an illustration of one, in appendix M.

One other item remains to be addressed in this DACUM coordinator's/facilitator's handbook; that person's own professional development and growth. A beginning facilitator should ask a qualified person to evaluate their performance immediately after observing his or her facilitation of a DACUM workshop.

They should also submit copies of their first few analyses to experienced facilitators for constructive critiquing. All facilitators should do their part to maintain the integrity and quality of the DACUM process. The bibliography includes a growing list of DACUM references that DACUM facilitators should obtain and with which they should become familiar.

DACUM has indeed proven itself an effective, efficient, and viable alternative to traditional occupational analysis procedures. When DACUM is properly used, it is a powerful tool for evaluating an existing program or developing a new one.

APPENDIX A

A BRIEF HISTORY OF DACUM

A. Clinton, Iowa Job Corps

DACUM (Developing A CurriculUM) is a new approach to the development of curricula combined with a new evaluation process for occupational training programs. It was created initially in a joint effort by the Experimental Projects Branch, Canada Department of Manpower and Immigration, and General Learning Corporation of New York, which provided technical direction to the Women's Job Corps program at Clinton, Iowa. Early efforts at Clinton were intended to produce a curriculum guide that would enhance trainee involvement in the training program and in planning for goal attainment. The result was a graphic presentation of the curriculum similar to a time bar chart. Following these early efforts, an experimental DACUM for a typical occupation was developed in Canada as a model for further application. It was introduced to the NewStart Corporations in 1968 during their planning stages.

The idea was adopted by Nova Scotia NewStart Inc. because of a number of circumstances that demanded a new approach to curriculum development. Because of the nature of the NewStart assignment, it was necessary to respond quickly to the needs of disadvantaged adults. This, in turn, created a need for immediate action in planning any training program and defining it in curricular form.[1]

B. Holland College, Charlottetown, P.E.I., Canada

DACUM was adopted by Holland College in 1969 through efforts of President Donald Glendenning and program development specialist, Larry Coffin. DACUM is used as the basis for developing all of their educational programs. DACUM has also been widely used by many other postsecondary colleges throughout Canada such as Humber College of Applied Arts and Technology in Toronto where a DACUM chart exchange service has been established.

C. National Center for Research in Vocational Education

Robert E. Norton and James B. Hamilton learned of the DACUM procedure from Larry Coffin in May 1975, during a performance-based teacher education (PBTE) resource person's training workshop at Holland College.

In January 1976, Robert E. Norton employed Larry Coffin to facilitate the first DACUM conducted at the National Center. An analysis of the job of local vocational education administrator was conducted at that workshop.

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[1] Taken from R. E. Adams, DACUM: Approaches to Curriculum Learning and Evaluation in Occupational Training, Ottawa, Canada, 1975, p. 23.

In January 1976, Robert E. Norton employed Larry Coffin to facilitate the first DACUM conducted at the National Center. An analysis of the job of local vocational education administrator was conducted at that workshop.

In December 1976, Robert E. Norton conducted a DACUM analysis of the job of legal assistant for the Colorado Instructional Materials Service at Colorado State University, Fort Collins. Later, Wiley B. Lewis and Phyliss J. Abt conducted many additional DACUM occupational analyses for the Colorado State Department of Education. In October 1977, Norton facilitated an analysis of the job of vocational teacher implementing competency-based education at the National Center.

In February 1978, the DACUM process was explained and promoted as an alternative approach to occupational analysis at two national USOE-EPDA funded workshops on (1) the implementation of competency-based administrator education (CBAE) programs and (2) the implementation of competency-based staff development (CBSD) programs.

In April 1978, Dean Don Altieri of Caldwell Community College and Technical Institute (Hudson, North Carolina) employed Robert E. Norton to conduct an analysis of the job of radiologic technologist. That was followed by his conducting an analysis of the job of instructional specialist for the ACCTion Consortium at Tri-County Technical College (Pendleton, South Carolina) in August 1978.

In 1979, a number of requests for DACUM workshops were received and analyses conducted at various community colleges and at the National Center by Audni Miller-Beach, James B. Hamilton, Robert E. Norton, Karen Quinn, and a few other staff members. A few non-National Center persons, most of whom went to Holland College for training, also started conducting DACUM workshops.

In March 1982, Robert E. Norton was employed by Trident Technical College (Charleston, South Carolina) to both conduct an analysis of the job of industrial mechanic and train three DACUM facilitators for the college. An unpublished DACUM coordinator's handbook was assembled for that workshop.

The National Academy, under the leadership of Mark Newton and Audni Miller-Beach, arranged for a DACUM on DACUM to be conducted at the National Center in October 1982. It was that occupational analysis that provided the research base for development of this DACUM Handbook and guidelines for the development of a formalized DACUM coordinator/facilitator training program.

In January 1983, Robert E. Norton trained and assisted persons in Venezuela to conduct a DACUM analysis of the job of vocational superintendent at Maracay. In November 1983, he also conducted an orientation program and demonstration DACUM in Jakarta, Indonesa for the Asia-Pacific regional office of the International Labor Organization ILO/APSDEP. Twenty-five persons from eleven countries participated in the analysis of the job of vocational instructor/trainer.

In January 1984, Audni Miller-Beach, James B. Hamilton, and Robert E. Norton planned and conducted a DACUM training program for preparing other National Center staff to assume the responsibility for facilitating DACUM workshops. In July 1984, the National Center conducted its first official DACUM Training Institute for twelve carefully selected candidates from the United States, Canada, and Pakistan.

The second DACUM Training Institute was conducted at Caldwell Community College and Technical Institute in Hudson, North Carolina in October 1984 and as this document is being finalized, preparations are being made to conduct the third DACUM Training Institute in March 1985 at Brookhaven College, a member of the Dallas County Community College District.

D. Other Major Users in the United States

The author is unaware of all of the many users of the DACUM process for occupational analysis in the United States and apologizes in advance to any major users that are not herein listed. Perhaps the major user outside of the National Center, whose staff have conservatively conducted over 125 DACUM workshops since 1976, is the Curriculum Materials Service at Colorado State University at Fort Collins, where Wiley Lewis and others have conducted over 50 workshops. Other major users and promoters include Tim Nolan for the AACTion Consortium at Tri-County Technical College, Pendleton, South Carolina; Jack Harris of Stark Technical Institute, Canton, Ohio; Ken Kyre of the State Board for Technical and Comprehensive Education, Columbia, South Carolina; Betty Howe, Director of Instructional Development for Trident Technical College, Charleston, South Carolina; Don Altieri, Dean of Caldwell Community College and Technical Institute, Hudson, North Carolina; Laura Capp, CBE Curriculum Coordinator at Seminole Community College, Sanford, Florida; and Marilyn Peterson, Educational Development Officer at Durham Technical Institute, Durham, North Carolina.

Recently, persons at the East Central Network for Curriculum Coordination have also begun to use and advocate the DACUM process.

APPENDIX B

CBE: AN EFFECTIVE AND REALISTIC APPROACH TO VOCATIONAL AND TECHNICAL EDUCATION

by Robert E. Norton

Essential Elements and Desirable Characteristics

Traditionally, in all of education, we have accepted the option of making learning the variable and time the constant. Whenever we say that a course involves so many hours of instruction, we are openly admitting our acceptance of this historical approach to education. A set number of hours per course is admittedly an administrative and planning convenience that is hard to give up. However, under these circumstances, our teaching is often geared to covering as much information as possible in the time permitted, in hopes that enough will be learned to allow our students to be successful.

Many persons feel it is about time that those of us involved in vocational and technical education should be opting to implement programs in which learning is the constant and time the variable. Vocational educators in many states, including New York, Kentucky, Florida, North Carolina, and Pennsylvania, are currently working hard to make this option a reality in their vocational and technical education programs through the implementation of competency-based education (CBE).

Before proceeding, it should be noted that terms and acronyms for these programs abound: CBE, PBE, CBSD, CBAE. What is important is that all such programs, regardless of the specific names attached to them, should possess the essential and desirable characteristics described below in order to be considered truly competency- or performance-based. See figures 5 and 6 to review with some of the many competency/performance-based terms and acronyms being used, their meaning, and the common and unique factors associated with each type of program.

To understand fully the meaning of CBE, one must be aware of the essential elements and desirable characteristics of such programs.[1] There are five essential elements:

1. Competencies to be achieved are carefully identified, verified, and made public in advance--This simply means that the important entry-level competencies for any occupational program area must be identified in some appropriate manner, verified as relevant by experts who should know that field, and then made known to students and everyone else interested in what the program is designed to teach.

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[1] The essential elements and desirable characteristics presented here are adapted from Achieving the Potential of Performance-Based Teacher Education: Recommendations, PBTE Monograph Series: No. 16 (Washington, DC: American Association of Colleges for Teacher Education, 1974).

2. Criteria to be used in assessing achievement and the conditions under which achievement will be assessed are explicitly stated and made public in advance--This means we are going to eliminate guessing games about what parts of the course are important and tell students exactly how their performance will be evaluated. The implementation of this essential element also means that we are giving up the traditional norm-referenced approach to the evaluation of student achievement in which the focus is on comparing a student's progress with that of other students. In its place, we are adopting the criterion-referenced approach in which each individual student's progress is compared with previously established criteria that are made known to all who are concerned.

3. The instructional program provides for the individual development and evaluation of each of the competencies specified--What we are saying here is simply that each student shall be given the opportunity to develop each of the competencies important to his/her training program, and that each student will be given the opportunity to demonstrate attainment of each competency. This essential element has strong implications regarding the need to individualize CBE programs to the maximum extent possible and for the type of instructional materials needed to make individualization possible.

4. Assessment of competency takes the students' knowledge and attitudes into account but requires actual performance of the competency as the primary source of evidence--CBE goes beyond the traditional educational expectation that students should know the "how" and "why" of things and places a strong emphasis on the "ability to do" as well. Of course, in order to perform a task correctly, the student will need to acquire the necessary prerequisite knowledge and attitudes. Acquiring the necessary prerequisite knowledge and attitudes involved, however, does not by itself ensure the student's actual ability to perform important competencies. It is with regard to this essential element of CBE that many programs fall short, relying instead only upon paper-and-pencil tests of cognitive understanding as proof of competency. While such measures can appropriately be used to assess prerequisite knowledge, they must be supplemented by performance-oriented, process-and-product checklists or other measurement devices that permit assessment of the student's actual ability to perform the expected competencies.

5. Students progress through the instructional program at their own rate by demonstrating the attainment of specified competencies--Said in another way, we want to make time the variable and learning the constant. Again, it is clear that some individualization of instruction is called for. While student progress is dependent upon the demonstration of competencies, this element does not mean that reasonable time limits cannot be imposed upon the students. Some persons may want to interpret this element to mean that only the student is accountable for his/her progress. Not so--a CBE program places accountability for learning squarely upon the shoulders of both the learner and the instructor.

The additional desirable characteristics of CBE programs are as follows:

1. Instruction is individualized to the maximum extent possible, rather than group-paced.
2. Learning experiences are guided by frequent feedback.
3. Emphasis is on helping the student achieve program exit requirements.
4. Instruction is individually paced rather than time-based.
5. Instruction is, to a considerable extent, field-centered--based on realistic work problems and situations.
6. Instruction is often modularized and uses materials with both required and optional learning activities to help achieve flexibility and provide for different learning styles.
7. The program as a whole is carefully planned and systematic (e.g., concerned staff are involved in planning, and evaluation data is used for program improvement).

To help the reader visualize some of the major differences between a CBE program and a conventional program of vocational education, twelve factors related to each of the programs are presented below. Admittedly, few of today's programs would meet exactly the criteria for either type of program. While most actual programs are probably located somewhere between the two extremes, the comparison helps to summarize some of the basic differences inherent in the two approaches.

	Conventional Vocational Programs	Competency-Based Vocational Programs
1.	Content-Based	Competency-Based
2.	Time-Based	Performance-Based
3.	Group Paced	Individually Paced
4.	Group Needs	Individual Needs
5.	Delayed Feedback	Immediate Feedback
6.	Textbook/Workbook Materials	Modules and Media Materials
7.	Limited Field Experience	Learning in the Field
8.	Lectures, Demonstrations	Assistance of Resource Person
9.	General Objectives	Specific Objectives
10.	Subjective Criteria	Objective Criteria
11.	Norm-Referenced	Criterion-Referenced
12.	Final Grades	Student Competence

Whether you are implementing your own CBE program, helping another teacher or instructor implement such a program, or in the position of evaluating programs implemented by others, some means of formative evaluation can be very helpful. With the essential elements and the desirable characteristics in mind, a Competency-Based Education Program Evaluation Checklist (see figure 7) has been devised to help you assess the status of any CBE program. It is recognized that different states and school systems have somewhat differing philosophies about what CBE is and, hence,the checklist may have to modified somewhat to fit local philosophies. Nevertheless, it is felt that the criteria listed reflect the minimum essential program elements that are generally recognized as necessary to assure overall program quality. It is hoped that the instrument can be used in a positive way to promote further the implementation of high-quality CBE programs that will better meet the vocational and technical education needs of our youth and adults.

Programs for Secondary and Postsecondary Students

CBE - Competency-based education
CBI - Competency-based instruction
PBI - Performance-based instruction
PBE - Performance-based education
PBVE - Performance-based vocational education
CBVE - Competency-based vocational education

Programs for Teachers/Instructors in University Settings*

PBTE - Performance-based teacher education
CBTE - Competency-based teacher education
PBVTE - Performance-based vocational teacher education
CBVTE - Competency-based vocational teacher education
C/PBTE - Competency/Performance-based teacher education
P/CBTE - Performance/Competency-based teacher education

Programs for Teachers/Instructors in Staff Development Settings*

CBSD - Competency-based staff development

Programs for Administrators

CBAE - Competency-based administrator education

Programs for Guidance Personnel

CBCG - Competency-based career guidance

Process for Occupational Analysis

DACUM - Developing A Curriculum

*The same performance-based modularized materials are used in both types of programs.

Fig. 5. Competency/performance-based acronyms and their meanings.

TERMS		COMMON FACTORS		UNIQUE FACTORS	
Preferred Term	Other Commonly Used Terms	Essential Elements/Program Characteristics	Desirable Elements/Program Characteristics	Group(s) Referred To	Type(s) of Competencies
CBE COMPETENCY-BASED EDUCATION	CBI PBI PBE CBVE CBVI	THESE ARE THE SAME FOR ALL PROGRAMS AND GROUPS; in short: 1. COMPETENCIES ARE IDENTIFIED, VERIFIED, AND MADE PUBLIC. 2. CRITERIA AND CONDITIONS FOR ASSESSMENT ARE SPECIFIED AND MADE PUBLIC. 3. PROGRAM PROVIDES FOR THE INDIVIDUAL DEVELOPMENT OF COMPETENCIES. 4. FINAL ASSESSMENT REQUIRES ACTUAL PERFORMANCE. 5. STUDENTS PROGRESS AT THEIR OWN RATE.	1. Instruction is individualized to maximum extent possible. 2. Frequent feedback is provided the learner. 3. Program provides for open-entry/open-exit. 4. Modules or other individual learning packages are used. 5. Instruction is based on realistic work situations. 6. Multi-mode required and optional learning activities are used. 7. Criterion-referenced evaluation is used. 8. Program evaluation and revision are continuous.	- Secondary, postsecondary, and adult vocational and technical students	- Technical and vocational skills - Sources include DACUM, V-TECS, some state curriculum labs, and other educational agencies
PBTE PERFORMANCE-BASED TEACHER EDUCATION	CBTE PBVTE CBVTE C/PBTE P/CBTE			- Preservice and inservice vocational teachers and instructors - Four-year college or university-based teacher education programs	- Professional (pedagogical) teaching skills - Several competency lists exist including NCRVE 127 (based on Cotrell 384) - and Hamilton et al. competencies
CBSD COMPETENCY-BASED STAFF DEVELOPMENT	PBSD			- Inservice vocational teachers and instructors - Staff development program operated in a secondary or two-year postsecondary agency; or in business/industry settings	Same as above
CBAE COMPETENCY-BASED ADMINISTRATOR EDUCATION	NOTE: This may be confused with competency-based adult education			Secondary and postsecondary administrators of vocational and technical education programs	- Professional leadership and management skills - Several lists exist including Norton et al. 166
CBCG COMPETENCY-BASED CAREER GUIDANCE				Career guidance personnel	Career guidance career development skills in 6 areas: planning, supporting, implementing, operating, evaluating, special populations

Fig. 6. Competency/performance-based education concepts.

____
Program

____
Name

____
Date

Directions: Indicate the extent to which the program being evaluated has implemented each of the following essential elements and desirable characteristics by checking the appropriate box under Level of Implementation.

	Level of Implementation			
	Poor	**Fair**	**Good**	**Excellent**
A. ESSENTIAL CHARACTERISTICS:				
1. Competencies to be achieved by the students have been:				
a. carefully identified	☐	☐	☐	☐
b. verified by local experts	☐	☐	☐	☐
c. made public	☐	☐	☐	☐
2. Criteria for assessing each of the verified competencies have been:				
a. derived from analysis of the competencies	☐	☐	☐	☐
b. explicitly stated along with conditions	☐	☐	☐	☐
c. made public	☐	☐	☐	☐
3. Instructional program provides for the:				
a. individual development of each competency	☐	☐	☐	☐
b. individual assessment of each competency	☐	☐	☐	☐
4. Assessment of the students' competency:				
a. takes knowledge into account	☐	☐	☐	☐
b. takes attitudes into account	☐	☐	☐	☐
c. requires actual performance of the competency as the major source of evidence	☐	☐	☐	☐
5. Students progress through the program:				
a. at their own rate	☐	☐	☐	☐
b. by demonstrating their competence	☐	☐	☐	☐
B. DESIRABLE CHARACTERISTICS				
6. Instruction is individualized to the maximum extent possible	☐	☐	☐	☐
7. Learning experiences are guided by frequent feedback	☐	☐	☐	☐
8. Emphasis is upon students' achievement of exit requirements	☐	☐	☐	☐
9. Instruction is individually paced rather than time-based	☐	☐	☐	☐
10. Instruction is field-centered using realistic work situations and actual on-the-job experiences	☐	☐	☐	☐
11. Instructional materials are:				
a. modularized	☐	☐	☐	☐
b. mediated	☐	☐	☐	☐
c. flexible with both required and optional learning activities provided	☐	☐	☐	☐
12. The instructional program as a whole is carefully planned and systematic—evaluation data is used for program improvement	☐	☐	☐	☐

Level of Implementation: In a fully implemented CBE program, all items will receive an excellent response. If any item receives a Poor or Fair response, you should meet with your competency-based education program coordinator to determine what changes are needed and how you can get help in making them.

Fig. 7. Competency-based education program evaluation checklist.

APPENDIX C

TERMINOLOGY ASSOCIATED WITH DACUM AND CBE

Activity, Operation, or Step--One or more of a series of actions necessary to complete a task.

Competence--Achievement of the knowledge, skills, and attitudes required by a worker in order to perform a given occupational task.

Competency--A description of the ability one possesses when they are able to perform a given occupational task effectively and efficiently.

Competency-Based Education (CBE)--An instructional program for preparing students that adheres to the essential elements and desirable characteristics of competency-based education. Programs of this type are also sometimes called performance-based education (PBE).

Competency Profile--A graphic portrayal of all the duties and associated task statements important to workers in a given occupation. An occupational profile chart is used by many institutions to record competency attainment and to help assess student needs. Also used are the terms task list, occupational profile, and DACUM chart.

Coordinator--The person who plans the DACUM occupational analysis process, makes the necessary preworkshop arrangements--including the selection of the committee occupational experts--and provides for verification of the task statements.

Criterion-Referenced Measure--The standards, established in advance of instruction, that will be used for assessing the students' development of the skill, knowledge, and/or attitude as stated in the performance objective. The standards are based on actual occupational standards and do not involve measuring the performance of one student against the performance of other students.

Curriculum--A description or composite of statements about "what is to be learned" by a student in a particular instructional program; a product that states the "intended learning outcomes" that have been selected and ordered.

DACUM--An acronym for Developing A Curriculum. It is an approach to occupational analysis that involves bringing a committee of occupational experts together under the leadership of a trained facilitator. They use modified brainstorming techniques to specify in detail the duties and tasks that successful workers in their occupation must perform.

Duty--An arbitrary clustering of related tasks into a broad functional area or general area of responsibility.

Educational (Training) Program--The complete curriculum and instruction (what and how) that is designed to prepare a person or group of persons for employment in a job or other particular performance situation.

Enabling Objective--One of the several process-type objectives that help students progress toward achievement of a terminal objective.

Facilitator--The person who leads the DACUM occupational analysis workshop to identify the actual job duties and tasks.

Feedback--A learning activity in which the learner is provided with information about his/her progress through model answers, model critiques, product/performance checklists, or other means.

Individualized Instruction--An approach for managing the instructional process within which the focus is on helping individual learners (as opposed to groups of learners) acquire the knowledge, skills, and attitudes needed. It is geared to the student's own needs, learning preferences, and rate of learning.

Information Sheet--Segment of a learning package (module or learning guide) that is used to provide cognitive information to the learner.

Instruction--Whereas curriculum identifies the content or "what is to be learned," instruction is the process, the how, or the means by which the intended learning will be achieved.

Job--A specific position requiring the performance of specific tasks--essentially the same tasks are performed by all workers having the same title.

Learning Activity--The required and/or optional learning steps that the student takes in completing a learning package.

Learning Package--A generic term used to describe the many types of student learning materials used in most CBE programs. Two commonly used types are learning guides and modules.

- Learning Guide--A type of learning package that usually contains a terminal objective, enabling objectives, directions for learning activities, a listing of the external supportive resources needed, and evaluation activities. While learning guides are developed in a wide variety of formats, most are dependent upon external resources to provide the essential content needed.
- Module--A type of learning package that usually includes a terminal objective, enabling objectives, essential cognitive information, and evaluation activities. While modules are developed in a wide variety of formats, most are self-contained, transportable, and designed for either individual or group use.

Occupational Analysis--A process used to identify the duties and tasks that are important to workers in any given occupation. A number of alternative and acceptable approaches to occupational analysis are available. Also frequently called job analysis.

Occupational Cluster--A grouping of jobs that are related by the similarity of the tasks performed by the various workers.

Performance Checklist--A list of specific criteria, usually based on actual occupational standards, that is used to evaluate the process used and/or product developed by a worker when performing an occupational task.

Performance Objective--A statement describing desired student performance, the conditions under which the performance is to occur, and the criteria by which the performance will be evaluated. The student is expected to be able to do something, rather than to simply know something. Thus, while knowledge is required in order to perform correctly, emphasis is place on observable behavior.

Resource Person--The professional educator who is directly responsible for guiding trainees and helping them plan and carry out their professional development programs.

Skill--The ability to perform occupational tasks with a degree of proficiency within a given occupation. Skill is conceived of as a composite of three completely interdependent components: cognitive, affective, and psychomotor.

Step--A term referring to the next level into which all job tasks may be subdivided. Also commonly referred to as activities, operations, or elements.

Task--A work activity that is discrete, observable, performed within a limited period of time, and that leads to a product, service, or desision. Tasks are also frequently referred to as the skills or competencies that students or trainees must obtain in order to be successful workers.

Task Analysis--The process of analyzing each occupational task (identified through occupational or job analysis) to determine the knowledge, attitudes, and skills required of workers performing it.

Task Statement--A description of a meaningful unit of work that contains an action verb and an object that receives the action (it may also contain one or more qualifiers) and represents a typical job assignment that an employer or customer would pay for.

Verification--The process of having experts review and confirm or refute the importance of the task (competency) statements identified through occupational analysis. Reviewers are usually selected from the ranks of practicing workers and immediate supervisors of such workers. This process is also sometimes referred to as validation.

APPENDIX D

SAMPLE LETTERS, DATA, AND INFORMATION SHEETS

Sample Letter to Employer

(Institutiona[illegible]terhead)

May 28, 19__

Dr. Andrew Brown
94 Livingston Avenue
Columbus, OH 43210

Dear Dr. Brown:

This letter will confirm our conversation about your willingness to release Kris Spencer to help us conduct a DACUM occupational analysis of the job of nursing assistant on June 24-25. Enclosed is a brief description of the DACUM procedure that we will be using and a copy of the letter that has been sent to Kris.

Our college greatly appreciates your cooperation in this important phase of our training program development process. With your assistance and that of other employers in the community, we can develop a curriculum that will better meet the needs of all workers.

Once the DACUM chart has been verified, we will send you a copy for your information and possible use. Should you have any questions about the DACUM process, please do not hesitate to call me at 486-3655.

Again, thanks for your kind assistance.

Sincerely,

John Overmeyer
DACUM Coordinator

Enclosures

Sample Letter to Panel Member

(Institutional Letterhead)

May 28, 19__

Ms. Kris Spencer
50 Brook Drive
Columbus, OH 43210

Dear Ms. Spencer:

Thank you for being willing to assist us with our DACUM workshop to be held on June 24-25 at our institution.

I would like to congratulate you on being identified by your employer as one of the best nursing assistants in this area. We appreciate your willingness to participate in what will be a very helpful procedure for us, and we feel, a personally rewarding experience for you.

We will be starting at 8:30 a.m. sharp on Tuesday, the 24th, and will probably continue until 5:00 p.m. each day. Enclosed is a map giving our exact location and a brief description of the DACUM occupational analysis procedure that we will be using. Please report to Room 1-C, in our 1960 Building by 8:15 a.m. for parking information and coffee.

Should you have any questions, please call me at 486-3655. We look forward to having you with us.

Sincerely,

John Overmeyer
DACUM Coordinator

Enclosures

cc: Dr. Andrew Brown

DACUM INFORMATION SHEET

WHAT IS DACUM (DEVELOPING A CURRICULUM)?

DACUM is a relatively new and innovative approach to occupational analysis. It has proven to be a very effective method of quickly determining, at relatively low cost, the competencies or tasks that must be performed by persons employed in a given job or occupational area.

The profile chart that results from the DACUM analysis is a detailed and graphic portrayal of the skills or competencies involved in the occupation being studied. The DACUM analysis can be used as a basis for (1) curriculum development, (2) student learning, (3) training needs assessments, (4) worker performance evaluations, and (5) competency test development.

DACUM has been successfully used to analyze occupations at the professional, technical, skilled, and semiskilled levels. DACUM operates on the following three premises: (1) expert workers are better able to describe/define their job than anyone else, (2) any job can be effectively and sufficiently described in terms of the tasks that successful workers in that occupation perform, and (3) all tasks have direct implications for the knowledge and attitudes that workers must have in order to perform the tasks correctly.

A carefully chosen group of about 10-12 experts from the occupational area form the DACUM committee. Committee members are recruited directly from business, industry, or the professions. The committee works under the guidance of a facilitator for two days to develop the DACUM chart. Modified small-group brainstorming techniques are used to obtain the collective expertise and consensus of the committee.

The DACUM committee is carefully guided through each of the following steps by the coordinator:

1. Orientation
2. Review of job or occupational area description
3. Identification of general areas of job responsibility
4. Identification of specific tasks performed in each of the general areas of responsibility
5. Review and refinement of task statements
6. Sequencing of task statements
7. Identification of entry-level tasks
8. Other options, as desired

Because of their current occupational expertise, committee participants do not need to make any advance preparations. Participants on past DACUM committees have, without exception, found the activity to be a professionally stimulating and rewarding experience.

PANEL MEMBER DATA SHEET

Company Name ______________________________

Company Address ______________________________

____

Contact Person: Name ______________ Title ______________

Phone ______________ Date Contacted ______________

Panel Member: Name ______________________________

Title (Job) ______________________________

Address ______________________________

______________________ Phone ______________

S.S. No. ______________ No. of Years Employed ________

Expense ______________________________

Communication:

Initial: By Phone ________ Date Reminder ________ Date Letter to Company ________ Date

Letter of Confirmation ________ Date Letter of Thanks ________ Date

Letter of Thanks ________ Date DACUM Chart Sent ________ Date

Other ______________________________
Describe Date

Comments:

APPENDIX E

SAMPLE NEWS ARTICLE ABOUT DACUM

Article from OPEN DOORS, a journal of the North Carolina Department of Community Colleges, Raleigh, Spring-Summer 1979, pp. 16-17.

DACUM Tried at Caldwell

In the final assessment, what counts in education is what students learn and not how long they are in school. With this in mind, Caldwell Community College and Technical Institute is working toward competency-based curriculums, especially in the occupational programs where skills can be more easily demonstrated and measured.

Dr. Don Altieri, the community college dean of educational development, said the college is joining the ranks of educational institutions across the nation who are updating curriculums with an emphasis on the students' development of and ability to demonstrate performance skills, as well as the more traditional goals of helping students gain knowledge and develop attitudes.

"It has been in our long-range plans for some time to move in this direction," he said. "In fact, we have already begun to work competency-based programs into our occupational areas. We collected lists of competencies from other places for a number of training programs but didn't know how to break them down into what we needed," he explained.

At a workshop he attended at Ohio State, Dr. Altieri said he discovered the Developing A Curriculum (DACUM) process which seemed to tie Caldwell's competency-based curriculum efforts together.

"The whole business sure made a lot of sense to me," he said. "The process was not so sophisticated that it couldn't be used by almost anyone. It was intensive but not complicated."

DACUM was created in the late 1960's by the Experimental Projects Branch of the Canada Department of Regional Economic Expansion and the General Learning Corporation of New York.

Essentially, it calls for a panel of experts in the occupational field under consideration, a facilitator or group leader who works well with a group but is not well enough acquainted with the field to exert any influence in decision-making, and a recorder to keep track of what comes out of the group interaction.

To become better acquainted with the DACUM process, Caldwell accepted the offer from its Radiologic Technology Program to experiment with the process in a workshop situation on campus.

Carolyn Holland, coordinator of the college's radiology program, contacted radiographers and radiologists working in local area hospitals to serve as the "panel of experts." Those who agreed to participate represented the wide range of experiences and job responsibilities in their occupation that is called for in the process.

Dr. Robert Norton, director of the post-secondary education staff development project at Ohio State and his assistant, Audni Miller-Beach, came as consultants to Caldwell Community College to conduct the workshop.

The workshop sessions covered the six DACUM steps beginning with an orientation of the panel to the process itself. Panel members were then asked to define their occupational area. "It was interesting how much

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Dr. Don Altieri and Carolyn Holland of Caldwell Community College and Technical Institute work on a competency-based program for radiologic technology.

discussion there was among the participants before they arrived at a definition they could agree on," Dr. Altieri commented.

Next, they were asked to identify major headings or categories, review and refine both categories and tasks, and put the two in proper sequence.

Participants worked 16½ hours over a two-and-a-half day period to complete the project. At the end they had listed the major competencies they felt a graduate of a Radiologic Technology Program should have to succeed in that occupation.

"We had a good group of people involved, and there was a lot of healthy discussion and evaluation among them before they came to an agreement about the competencies and tasks they felt were essential," Dr. Altieri said.

During this first phase of the process, input came only from the panel. Instructors in the college's training program and the facilitator were not allowed to contribute to the listing of competencies and tasks.

The next step, as Dr. Altieri described it, will be to compile a competency chart which will be reviewed by members of the panel and other professionals in the radiology field to verify, clarify and refine the competencies and tasks outlined by the panel during the workshop sessions.

"When this phase is completed and the chart is finalized, it will be up to the instructors to design a program with the kinds of learning experiences which will produce these competencies in students," Dr. Altieri explained.

The major goal of a competency-based program in any field is to produce graduates who know and can demonstrate competently the skills of their field in a job situation.

Dr. Altieri said that at some institutions where the entire curriculum is competency-based, graduates do not receive diplomas at the end of their training period. Instead, they get sheets listing the skills they should have developed during their training and indicating the level of competency they achieved in each of those skills. These sheets then give prospective employers a much clearer idea of what each graduate knows and can do on the job.

While Caldwell has no immediate plans for going the check sheet route, the college's goal is to better prepare the occupational graduates to perform well in the work situation and to make sure that what those graduates learn is what they need to know in order to succeed in their causes.

Dr. Altieri says the DACUM process seems to be an effective means for reaching that end.

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APPENDIX F

DACUM COMMITTEE ORIENTATION OUTLINE AND TRANSPARENCY MASTERS

ORIENTATION OUTLINE

This outline is a reiteration of the topics in the section of the handbook on orienting the participants. It may be useful as you prepare your own notes for the orientation process. It also references and contains masters of the overhead transparencies that are recommended to help you visually present essential information.

A. DACUM coordinator introduces welcoming official

- Welcomes panel officially.
- Thanks panel for their participation.
- Recognizes importance of their occupation and assistance.

B. Coordinator introduces facilitator

- Acknowledges skill required.
- Reviews facilitators qualifications/experience.

C. Facilitator takes over workshop

- Extends personal greeting.
- Asks each panel member to introduce self.
- Introduces recorder and instructor(s), if any.
- Uses ice-breaker activity, if desired.
- Creates informal, relaxed atmosphere.
- Reviews logistical arrangements (e.g., location of restrooms, meeting times, break procedures, etc.).

D. Facilitator establishes rapport

- Asks panelists to confer on a first-name basis.
- Asks panelists to remove ties, coats, etc., to get comfortable.
- Emphasizes care used in selecting them.
- Congratulates them on being selected and recognized as experts.
- Confesses his or her lack of occupational expertise.
- Expresses his or her enthusiasm for the DACUM process.

- Reviews his or her successful experiences.
- Attempts to put panel members at ease.
- Explains briefly the job to be done and how the host institution will use the resulting analysis for curriculum development.
- Asks panelists to discuss the many ways (good and bad) that a curriculum may be derived.
- Summarizes discussion (use Transparencies 1 and 2).

E. Begins explanation of DACUM

- Uses Transparency 3 to explain acronym.
- Uses Transparencies 4 and 5 to explain what DACUM is and how it has been used.
- Tells optional DACUM story, if desired.

F. States philosophy behind DACUM

- Uses Transparency 6 to present three assumptions.
- Asks for questions, explains as necessary.

G. Summarizes roles of panel and facilitator

- Emphasizes process skills of facilitator.
- Emphasizes expertise and decision-making skills of panel members.
- Stresses need for teamwork and cooperation.

H. Explains DACUM procedural steps

- Uses Transparency 7 to review the eight steps.
- Distributes and reviews one or more DACUM charts to illustrate what a completed chart looks like. Stresses use of action verbs, etc.
- Asks if there are questions.

I. Explains guidelines for panel operation

- Uses Transparencies 8 and 9.
- Asks if there are questions.
- Explains other options, if appropriate.

J. Conducts review of occupation and begins identification of competency areas (duties)

- Distributes and discusses working definition.
- Identifies general areas of competence.

TRANSPARENCY MASTERS

Transparencies 1 through 14 were designed by the author for use in the initial orientation of DACUM workshop participants, as well as in the training of DACUM coordinators and facilitators. Transparencies 15 through 21 have been adapted by the author from materials submitted by F. A. Embree of the Humber College of Applied Arts and Technology. They may be used in conducting DACUM workshops and/or in conducting training for DACUM facilitators and/or coordinators.

CURRICULUM

Advertising? Sales? Math? English?

Data Processing? Auto Mechanics?

Computers? Accounting?

DO WE TEACH—

- **What we know best?**
- **What we were taught?**
- **What we enjoy teaching?**
- **What we have experience with?**
- **What the textbook happens to include?**

—OR—

- **What the student most needs for successful employment?**

STRATEGIES FOR DECIDING WHAT TO TEACH

Most Subjective

- Philosophical Basis
- Personal Introspection
- Function Approach
- Critical Incident
- Delphi Techniques
- DACUM Process
- Occupational Research

Most Objective

DACUM

DEVELOPING

A

CURRICULUM

WHAT IS DACUM?

- AN APPROACH TO OCCUPATIONAL (JOB) ANALYSIS
- USED EXTENSIVELY IN CANADA AT POSTSECONDARY LEVEL
- USED BY MANY SECONDARY AND POSTSECONDARY SCHOOLS IN THE U.S.
- USED MANY TIMES BY THE NATIONAL CENTER FOR RESEARCH IN VOCATIONAL EDUCATION
- FOUND TO BE:

  EFFECTIVE

  QUICK

  LOW COST

SOME OCCUPATIONS ANALYZED BY DACUM

- LEGAL ASSISTANT
- DRAFTSPERSON
- ELECTRONICS TECHNICIAN
- CONSTRUCTION SUPERINTENDENT
- VOCATIONAL ADMINISTRATOR
- VOCATIONAL TEACHER
- RADIOLOGIC TECHNOLOGIST
- RESPIRATORY THERAPIST
- MACHINIST
- INDUSTRIAL ELECTRICIAN
- SECONDARY SCHOOL PRINCIPAL
- COMPUTER PROGRAMMER
- APPRENTICE REPRESENTATIVE

DACUM PHILOSOPHY

- EXPERT WORKERS ARE BETTER ABLE TO DESCRIBE/DEFINE THEIR OCCUPATION THAN ANYONE ELSE
- ANY JOB CAN BE EFFECTIVELY AND SUFFICIENTLY DESCRIBED IN TERMS OF THE TASKS SUCCESSFUL WORKERS IN THAT OCCUPATION PERFORM
- ALL TASKS HAVE DIRECT IMPLICATIONS FOR THE KNOWLEDGE AND ATTITUDES THAT WORKERS MUST HAVE IN ORDER TO PERFORM THE TASKS CORRECTLY

DACUM PROCEDURAL STEPS

1. ORIENTATION OF COMMITTEE
2. REVIEW OF OCCUPATION
3. IDENTIFY GENERAL AREAS OF RESPONSIBILITY (DUTIES)
4. IDENTIFY SPECIFIC TASKS PERFORMED
5. REVIEW AND REFINE TASK AND DUTY STATEMENTS
6. SEQUENCE TASK AND DUTY STATEMENTS
7. IDENTIFY ENTRY-LEVEL TASKS
8. OTHER OPTIONS AS DESIRED

OPERATIONAL GUIDELINES

- EVERYONE PARTICIPATES EQUALLY
- SHARE IDEAS FREELY
- HITCH-HIKE ON EACH OTHER'S IDEAS
- PROVIDE CONSTRUCTIVE SUGGESTIONS RATHER THAN NEGATIVE CRITICISMS
- ALL TASK STATEMENTS ARE CAREFULLY CONSIDERED
- DO NOT USE ANY REFERENCES
- OBSERVERS CANNOT PARTICIPATE
- ALL TASK STATEMENTS MUST BEGIN WITH AN ACTION VERB AND REFLECT AN OBSERVABLE PERFORMANCE

UNWRITTEN STEM OF TASK (COMPETENCY) STATEMENTS

THE INDIVIDUAL WORKER
MUST BE ABLE TO:

KEY TERMS

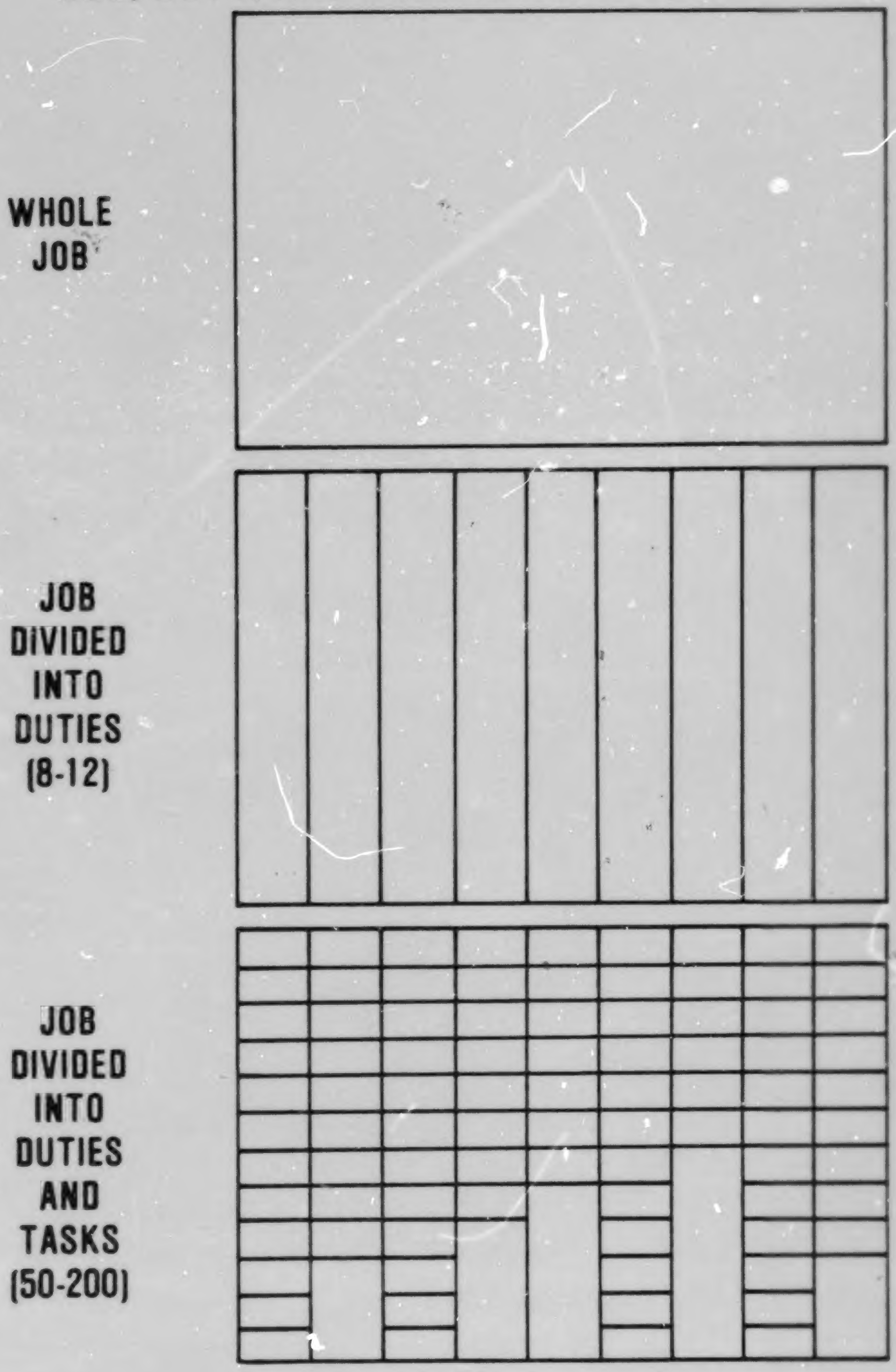
DUTIES	• AN ARBITRARY GROUPING OF RELATED TASKS • USUALLY 8-12 PER JOB
TASKS	• SPECIFIC OBSERVABLE UNITS OF WORK • USUALLY 6-30 PER DUTY AND 50-200 PER JOB
STEPS	• SPECIFIC ELEMENTS OR ACTIVITIES REQUIRED TO PERFORM A TASK • AT LEAST TWO OR MORE PER TASK

KEY TERMS

JOB ANALYSIS = IDENTIFICATION OF JOB DUTIES AND TASKS

TASK ANALYSIS = IDENTIFICATION OF THE STEPS, KNOWLEDGE REQUIRED, TOOLS, SAFETY FACTORS, AND PERFORMANCE STANDARDS RELATED TO ONE OR MORE TASKS

GRAPHIC REPRESENTATION OF JOB, DUTY, AND TASK RELATIONSHIPS



WHOLE JOB

JOB DIVIDED INTO DUTIES (8-12)

JOB DIVIDED INTO DUTIES AND TASKS (50-200)

JOB TASKS:

- HAVE A DEFINITE BEGINNING AND ENDING POINT
- CAN BE PERFORMED OVER A SHORT PERIOD OF TIME
- CAN BE PERFORMED INDEPENDENT OF OTHER WORK
- CONSIST OF TWO OR MORE STEPS
- CAN BE OBSERVED AND MEASURED
- RESULT IN A PRODUCT, SERVICE, OR DECISION

TASK STATEMENTS:

- REFLECT A MEANINGFUL UNIT OF WORK
- CONTAIN AN ACTION VERB AND AN OBJECT THAT RECEIVES THE ACTION
- MAY CONTAIN ONE OR MORE RELEVANT QUALIFIERS BUT OMIT QUALIFIERS SUCH AS EFFECTIVELY AND EFFICIENTLY
- ARE EXPLICIT, PRECISE, AND STAND ALONE
- AVOID REFERENCES TO KNOWLEDGE AND ATTITUDES NEEDED
- AVOID REFERENCES TO TOOLS AND EQUIPMENT THAT MERELY SUPPORT TASK PERFORMANCE

1. ORIENT COMMITTEE TO:

DACUM

DEVELOPING A CURRICULUM

2. REVIEW OF OCCUPATION

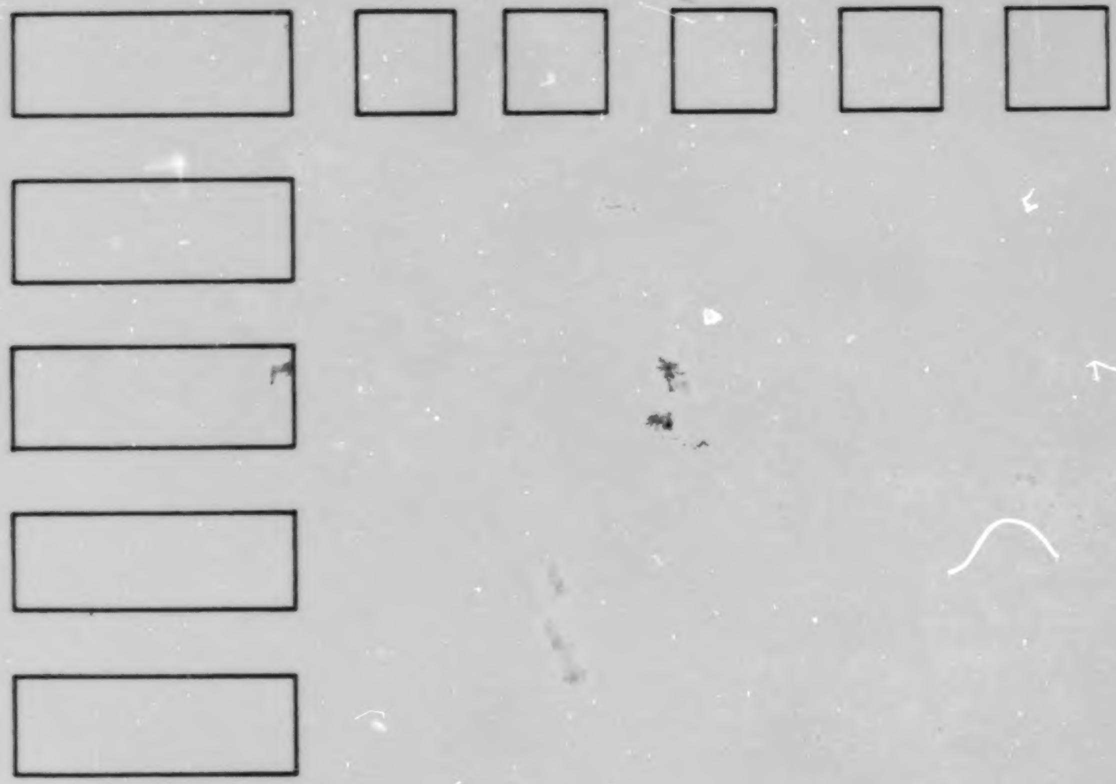
—Zero in on the occupation

- Professional
- Technician
- Tradesmen
- Helper

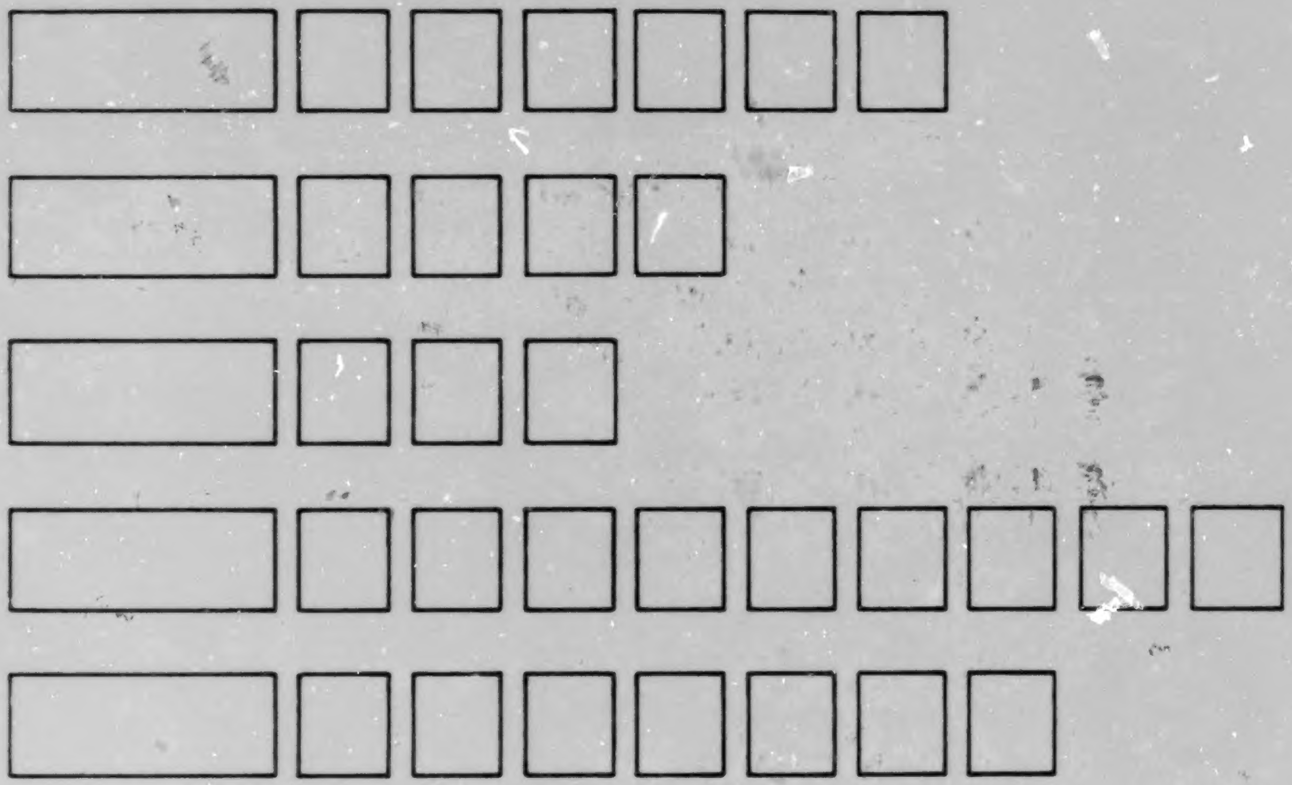
WORLD OF WORK

3. IDENTIFY GENERAL AREAS OF RESPONSIBILITY (DUTIES)

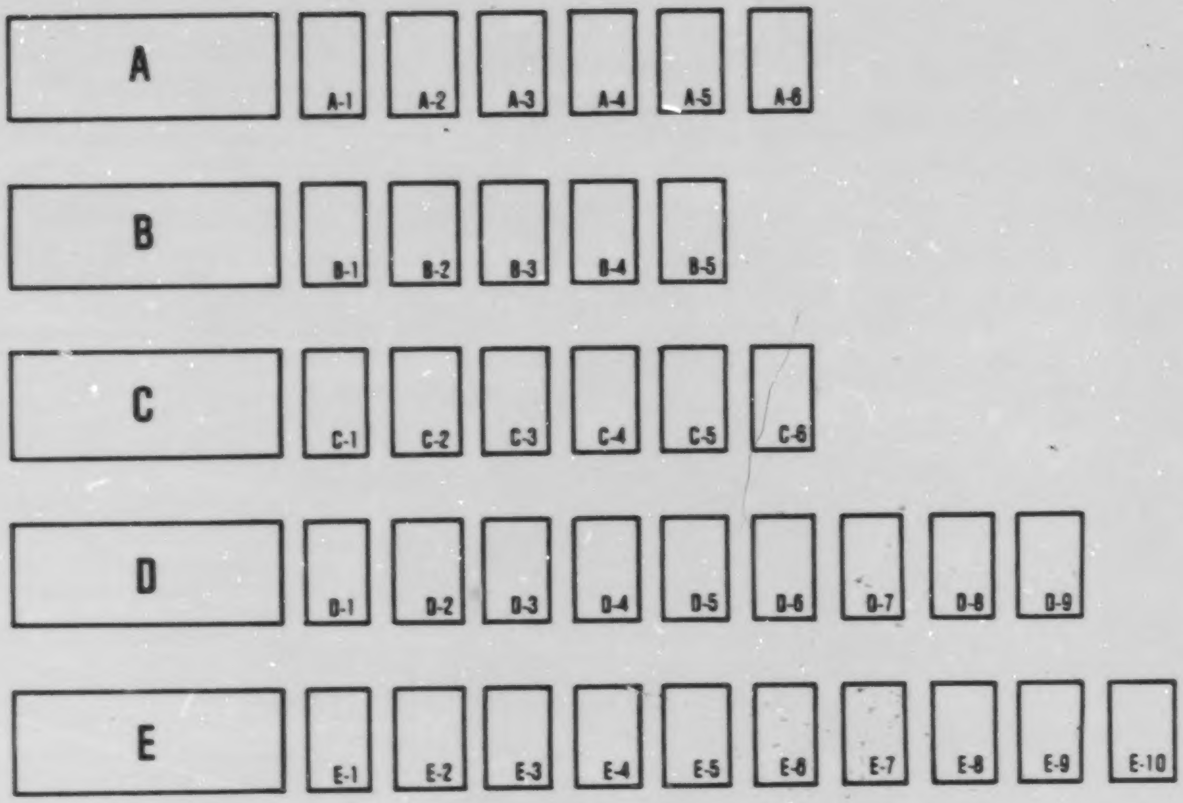
4. IDENTIFY THE SPECIFIC TASKS PERFORMED



5. REVIEW AND REFINE TASK AND DUTY STATEMENTS



6. SEQUENCE TASK AND DUTY STATEMENTS


A
A-1
A-2
A-3
A-4
A-5
A-6
B
B-1
B-2
B-3
B-4
B-5
C
C-1
C-2
C-3
C-4
C-5
C-6
D
D-1
D-2
D-3
D-4
D-5
D-6
D-7
D-8
D-9
E
E-1
E-2
E-3
E-4
E-5
E-6
E-7
E-8
E-9
E-10

7. IDENTIFY ENTRY-LEVEL TASKS

A	☐	☐	☐	☐	☐	☒	☒		
B	☐	☐	☐	☐	☒	☒			
C	☐	☐	☐	☐	☐	☐	☐	☐	
D	☐	☐	☐	☐	☐	☐	☒	☒	☒
E	☐	☐	☐	☐	☐	☐	☐		

APPENDIX G

POTENTIAL PROBLEMS IN WORKING WITH DACUM COMMITTEES

Problems in Working with Committees

The foregoing suggested techniques for organizing committees and conducting committee workshops to develop DACUM charts are stated in terms of the functions of the co-ordinator and the demands he must place on the committee in order to achieve quality. Nevertheless, there are a number of situations that can and will interfere with chart development. The following are problems that have been encountered. The co-ordinator should be aware of these so that he may take the suggested corrective action to maintain committee focus and better assure the quality of the analysis task.

1. Committee Too Small

A committee of three or four persons presents special problems. Normally members serve as a sounding board for the co-ordinator, helping him determine if contributions are accurate and applicable in the wide range of activities in the occupation. If the committee is too small, the co-ordinator has less opportunity to verify accuracy. First, there is a tendency for one person to dominate. It is easier for one person to engineer a role for himself in which he makes most of the contributions and casts the others in a supporting, confirming role. Second, small committees selected on a regional or local basis tend to focus their contributions on immediate needs even though the task calls for wider coverage. Finally, small committees tend to focus on a particular area or specialty and may be reluctant to explore diverse activities or specialties in the occupation.

The co-ordinator must consistently steer discussion away from the single person, the local community, or the single specialty in the occupation. He may have to ignore the dominant person at times and solicit contributions from the others, casting the dominant person in the role of confirming other contributions. When a small committee becomes too localized or begins to focus on a familiar specialty, the co-ordinator should periodically halt proceedings for a review, pointing out the previously established boundaries and range of application of the occupation. It is also useful to solicit confirmation from committee members that they have adequate knowledge of or prior experiences in the applications they are tending to de-emphasize. In other words, it may be necessary to reconfirm for them that they are indeed capable of handling the entire scope of the analysis. The co-ordinator can directly broaden the coverage of the analysis by consistently asking the committee if each definition would apply in and is adequately stated for specific regions or firms he might designate.

Taken from DACUM: Approach to Curriculum, Learning, and Evaluation in Occupational Training by Robert E. Adams, Department of Regional Economic Expansion, Ottawa, Canada: Revised 1975, pp. 107-118.

2. Committee Too Large

In cases where committees are very large (15 or more) problems of a different sort appear. A number of committee members make relatively few contributions unless a definite plan is made to stimulate the contribution of each. Overt efforts to do this, however, might dampen the enthusiasm of more vocal committee members who obviously are ready to specify skill definitions they know must appear on the chart.

In some cases the large committees will consist of a number of members who are content to sit back and allow a more vocal group to provide most of the contributions. In the interest of the assignment, the co-ordinator may allow this to continue throughout the workshop. However, he must take steps to ensure that it does not become a problem. The co-ordinator can periodically ask specific members who are less vocal to describe applications of skills in their own firms or specialties. This gets them participating and gives them an opportunity to describe differences and to help in specifying the skills more accurately. In reality, they are beginning to contribute skill definitions of their own which in turn generates enthusiasm for becoming a part of the skill specification process.

The co-ordinator can also involve the less vocal committee members when the prime contributors run into difficulty over wording and, more importantly, during the final stages of chart development in order to ensure the skill definition is suitable for their own and other environments.

3. Disadvantageous Seating Arrangements

Seating must be arranged so all persons can see the wall surface and read the definitions. In large committees, the more vocal participants often cluster in the front row and block the view of those who sit behind. The co-ordinator can improve the situation through some simple techniques. First, he can arrange the chairs close together in two rows so that there is no need for a third row of chairs. Second, he can place the front row four or five feet from the wall. This brings those in front into close contact with the wall and allows the back rows to move closer. It also tends to balance contributions, as those in front may have to rely on those behind to read the extremities of the chart. Third, the co-ordinator must take steps to place persons with audio or visual difficulties to best advantage. Those having difficulty in reading the cards from a distance should be moved to the front (which also provides an opportunity to request that a more vocal member move to the back). Similarly, persons with hearing problems should be situated near the co-ordinator and the centre of discussion. If such arrangements are not made, these persons will miss points and later make inappropriate contributions.

4. Late Arrivals for Orientation

Orientation provides the framework for the workshop, and it is important that all persons be present when it begins. Some persons attend meetings only to present a point of view. They do not intend to participate full time. Others arrive late due to unavoidable circumstances.

It has been found useful to orient these persons immediately and in private. This may be done by stopping for a coffee break. In some committee work, the presence of a second co-ordinator has enabled one to leave the workshop, orient the new arrival, and return with him to observe for a time and review work completed.

A late arrival will disrupt committee proceedings if he is not provided with orientation prior to making his contributions. If there is no opportunity to do this immediately on entry, it is best to ask him privately to refrain from contributing until he has been provided with appropriate orientation. He will learn a lot by observing and will not feel he has to begin debating issues at once.

5. Persons Who Treat the Workshop as Just Another Meeting

Occasionally, one encounters persons, particularly those who are in peripheral positions in the occupation, who attend a large number of meetings. They view curriculum and similar meetings as opportunities to renew old acquaintances, to discuss a variety of issues, and to raise special issues of their own.

It is difficult to convince such a person that the workshop is an activity which demands that a lot of hard work be done in a short period of time and that he must quickly learn to work within the required framework if the job is to be done. It is best to take him aside at the first opportunity such as a coffee break to discuss the issues with him and to encourage him to take a more objective view in working as part of the team.

6. Persons Concerned with the Prestige of the Occupation

One sometimes encounters an individual who is convinced that the prestige of his occupation will be enhanced by the prestige of the training program. He is unwilling to allow an activity of this sort to clarify exactly what the occupation is about lest this expose its simplicity. He will talk around issues and attempt to inflate them rather than share in the process of specifying a number of easy-to-define skills. A committee can work quite rapidly in specifying the more manipulative, procedural skills of the occupation, but this individual will try to involve the committee in discussing related issues such as philosophy of the occupation, the long-range future, and the effects of changing technology.

There are several techniques which the co-ordinator can apply to overcome this kind of resistance.

(a) He can ignore the individual and use others in the committee for contributions to the specific area or band in the chart that is being analyzed. While this person will resist and attempt to make some contributions, the co-ordinator should ignore these and allow the rest of the committee to contribute their specifications. The member may react by falling silent and may subsequently begin to participate as part of a committee. If he reacts by becoming even more vocal, the other members can usually be relied on to take action to reduce his interference.

(b) He can take the individual aside to re-explain the nature of the exercise and even to suggest that he consider leaving the workshop if he thinks he cannot participate.

(c) Occasionally such a person will insist that there are really only one or two skills in an area being analyzed or that the area is not significant or worthy of this kind of analysis. A useful technique is to proceed over his objections and assist the others in defining a number of skills in that area. This will expose his unreasonable attitude and arguments to the rest of the committee as well as to himself. In short, this is a definite move to turn the rest of the committee on him so that they, with their occupational expertise, can control a situation the co-ordinator cannot control.

7. Persons Concerned with Training for Purposes of Prestige

Some persons feel that if the chart reflects sophisticated theories and principles from a variety of fields it will make the graduate appear more sophisticated and thus enhance the prestige of the occupation. These persons are sometimes difficult to detect and subsequently handle because the co-ordinator himself is never sure whether specific information and skills are required until he can generate enough debate. Sometimes a person so concerned will influence the remainder of the committee to specify unnecessary content. The co-ordinator must be alert to the fact that they may be being influenced by someone or something other than their professional judgment. In addition to the techniques recommended in (6), the co-ordinator can refer the committee to other workshops where this tendency was present, describe the subsequent difficulties it caused, and suggest that this committee would not wish to dissipate effort in this way. Most members will jump at the opportunity to reject the influence of the person who initiated the problem.

8. Persons Concerned with Knowledge for the Sake of Knowledge

Persons who feel strongly about the dominant place of knowledge in training systems tend to emanate from three sources:

(a) There are persons in evolving occupations which have been ill-specified in terms of skill requirements. This is particularly noticeable in occupations that are evolving from several other occupations. There is a tendency to guess at what knowledge is required for application in several areas of expertise and assume this will enable the graduate to function at once in a new occupational role.

(b) There are persons in occupations which have traditionally provided on-the-job training with knowledge being provided on a release basis as an external activity at a technical institute or trade school. They see training as that portion of the individual's development that occurs in the external institution. They have difficulty in specifying what the individual does on the job and what competence he must acquire there.

(c) There are persons in nonprofessional occupations which operate under strong professional direction or control. The professional, because his own training was highly knowledge-oriented, is usually not accustomed to specifying skills in the way that is required and may tend to resist doing this, feeling that knowledge in itself is more important.

Sometimes there is a strong feeling that a wide background of information and theory is essential to enable the employee to speak intelligently about his field, as well as to perform capably, in order to be a credit to the occupation. In such cases it is useful for the co-ordinator to draw on examples which detract from this feeling. It is easy to point to occupations such as nursing or teaching in which increasing emphasis was placed on knowledge to the exclusion of useful occupational skills. This is one place in which it may be necessary to stop and debate some of the issues before proceeding. Persons who feel strongly about this issue will resist committee activities until such debate takes place.

9. People Who Believe that Knowledge Leads Directly to Performance

Self-trained persons who read extensively in order to keep informed in their field sometimes have difficulty in isolating and specifying skills. They attribute their own success primarily to the fact that they accumulated a good deal of knowledge, which, to them, is important. Consequently they prefer to specify competence by defining the elements of knowledge which they feel contribute to the competence.

Such persons are generally more difficult to work with than formally trained committee members, whose contributions are typically more precise. The co-ordinator must apply extra effort in assisting such persons to convert their ideas and contributions into skill definitions. Their input is, nevertheless, important for they generally have a wide background that can be capitalized on to improve the coverage of the chart.

10. Persons Concerned with Problem-Solving, Analytical Thinking as the Prime Requisite

There are those who believe that the analytical problem-solving thought process is the most critical component of any training program. They refuse to participate in direct specification of activities, tasks, and functions in which the individual must apply knowledge, and they discourage the attempts of others to do this. The co-ordinator frequently must counteract this by ignoring such persons and focusing attention on those who are contributing skill definitions.

11. Persons Concerned with Attitudes as Opposed to Skills

Some committee members express more concern for desirable employee attitudes than for skill specification. Such a person will argue that the problem in industry is attitudes and not skill weakness, and he will attempt to divert discussion away from skill definition and toward attitudes. This may be due to inability to specify skills because of lack of detailed knowledge of the occupation. Or it may be due to emphasis in a current work role that is related to employee relations or over-all productivity and, consequently, to concern for work force attitudes.

The co-ordinator can apply three techniques to encourage such a person to function as a member of the committee. First, he can redescribe and expand on the rationale for first obtaining a comprehensive description of skills required. It is impossible to develop appropriate attitudes if there is not a suitable skill or competency base on which to build. Second, he can ask the member to specify what he means by the attitude he is talking about and how it would be manifest in the work environment. Often members will, in spite of themselves, begin to specify a number of skills which can be recorded on the wall. Where this has been successful, it has been apparent that the member was specifying attitudes because neither he nor the other members had been able to define the related skills. As a final resort, the co-ordinator may have to allow such a person to talk out his concern, depending on other members to control him when his repeated reference to attitudes interferes too much with their work.

12. Persons Concerned with the Technicalities of Correct Terminology

Occasionally one encounters an individual who is concerned with the status of the occupation and will insist that "correct" terminology be used in all application. He will slow the pace of committee achievement as he will want to debate the adequacy of each skill as it is specified, thus inhibiting the brainstorming process. This happens most frequently in workshops for occupations in which there is current debate between schools of thought.

The co-ordinator can readily resolve this problem by agreeing to use both of two suggested definitions. Frequently, all that is involved is a choice between two descriptive words. This can be settled by placing one of the words in parentheses behind the other to satisfy both proponents.

Another technique is for the co-ordinator to keep insisting that all editorial review be reserved for the latter portion of the workshop. He must emphasize that brainstorming must continue and that final editing will be done at an appropriate time in the development of the chart.

13. Persons with Narrow Learning Experiences

Some occupations have a history of standardized training to which most who have achieved occupational competence have been subjected. This might be a block release information theory training program, a process of indentureship, or employment in a series of sub-jobs until the learner has adequately performed in each and is allowed finally to perform the real tasks of the occupation. In such cases, committee members will frequently question the wisdom of changing this pattern. They come up with such arguments as "There are intrinsic benefits for persons who have to learn in this way", "It's good discipline", "It will make a better man out of him".

Such situations demand frequent review of the DACUM principles. The co-ordinator must go beyond the initial brief orientation and draw on rationale that supports the use of this procedure. It is also necessary for the co-ordinator to assure committee members that the DACUM system contains similar learning experiences and that the learner is soon going to have to demonstrate his perseverance in achieving, his ability in completing tasks, and his interest in furthering himself in the occupation.

Another person of this sort is the professional who believes all learning takes place through books and lectures. He can frequently be encountered in looking at an occupation directly supporting a professional field. Books and lectures are mandatory for most professionals, and they feel that others should learn in the same way in order to be as adaptive and creative as they have been in their occupation.

14. Persons Who Believe There is Only One Way of Training for Their Field

One may occasionally encounter difficulty with an individual in an occupation with a long history of reasonably successful training. It is assumed that this is the optimum method of training for the occupation and that nothing should be allowed to change it. This sometimes becomes apparent during the restructuring of the chart in terms of establishing sequencing. If a particular sequence of skill acquisition has been the accepted mode in the field for many years, the individual will want to see this pattern repeated, feeling that someone at some point in time did a careful analysis and discovered an optimum way for providing training. He sometimes fails to see that it may have been established by accident or through hasty decision-making which resulted in a standard pattern because the training institutions in that field wanted standardization and merely adopted the initial pattern. In such cases, the co-ordinator should halt proceedings, explore these issues, try to determine the origin of the pattern, and determine its suitability for application in the DACUM system.

15. The Person Who Rejects the DACUM Approach

Occasionally one runs into a committee member who dislikes the DACUM approach because of its permissiveness. He feels it is too liberal in allowing people to determine what they are going to learn and how they are going to learn it. He suspects this may cause a breakdown of discipline considered necessary in the occupation.

This individual is typical of persons who function in an authoritative or autocratic fashion in relation to the people they employ. They fear the development of a new breed of workers who are self-starting and self-thinking and who may take views quite opposed to conventional industrial relations practice. They can frequently be detected by such remarks as, "There is nothing much wrong with our system right now. We just need to tighten up entry requirements so that a lot of people who have been getting in won't be getting in any more. Then we'll only take the cream of the crop for our occupation."

A most useful technique for dealing with such cases is for the co-ordinator to involve other members of the committee in discussing these issues. Normally the co-ordinator can rely on one or more committee members to be adequately alert to the potential of the DACUM process (even with limited exposure) to counterbalance the contributions of the dissenting committee member.

16. The Committee that Talks for the Sake of Talk

Some committees are heavily weighted with persons who like to attend meetings, are quite articulate, and enjoy discussion. They prefer to avoid the painstaking work at hand and treat the committee work as an opportunity to air views.

If this attitude dominates and committee work begins to suffer, there is little the co-ordinator can do. Efforts have been made in the past to apply techniques such as attempting to get the committee to focus more clearly on objectives or attempting to get it to pace itself toward completion of a set of goals. These have seldom been effective. In extreme cases it has been found necessary to disband the committee and resume the task with a new committee.

17. The Negative Critic

There are persons who excel at criticizing the contributions of others: "That skill isn't specified correctly", "That skill really doesn't apply", "That is a rather insignificant skill to be placing in an occupation like ours", "It's really much more complex than we have suggested". At the same time they will avoid making positive contributions.

Such persons may normally function in negative controlling or monitoring roles and not be comfortable in the positive brainstorming process.

One useful technique is to listen alertly to their conversation and promptly write and place a card on the wall when they begin to discuss what could be an identifiable skill. Specification of a series of skills in this way has been effective in converting some to a positive approach.

The only other useful technique has been to encourage the committee to deal with the problem. The co-ordinator should avoid personally debating the issues raised. This rarely succeeds because it is the negative approach, rather than the issues, that is the problem.

18. The Person Who is Afraid to Contribute for Fear of Exposing Ignorance

Occasionally one encounters a well-qualified recognized expert who has always worked in a situation in which he did not have to describe the characteristics or requirements of his occupation. Such an individual avoids contributing even though he appears to know what is transpiring in the workshop and be capable of contributing. He may fear that his lack of verbal skill will indicate technical incompetence to his colleagues in the committee. It is important for the co-ordinator to detect such an individual almost as soon as the committee's work begins and encourage him to make contributions. This is easily done by questioning him about poorly worded contributions of others and having him refine the definitions. The co-ordinator should also take every opportunity to solicit a contribution from him so that he may begin to feel he is a contributing member of the group. Frequently, when such a person emerges from silence, he becomes the most valuable participant in the workshop because he is direct and does not oververbalize.

19. The Person Who Rejects Co-ordinator Leadership

At times an individual will resist the leadership of the co-ordinator because he is not an expert in the occupation and he distrusts his ability to lead a committee in specifying requirements for a field about which he knows little.

It is important in such cases to maintain leadership and to apply techniques that will overcome such misgivings. One way is to provide examples of charts that have been developed by diverse committees and in which the co-ordinator had no more ability than he has in this particular occupation. Another technique is to describe the rationale of having an independent person perform in this role.

20. The Authority Figure Who Typically Controls

Some persons typically want to control a group and expect to lead any activity in which they become involved. If not controlled, they will focus discussion, issues, debates, and final decisions around themselves. It is interesting to note that this frequently occurs when most of the committee members have been selected from one firm or one specialty in the occupation. They may have become accustomed to allowing a dominant individual among them to chair meetings and lead activities, and, as a consequence, they allow him to assume leadership in the DACUM workshop.

Such persons are difficult to control, and at times it is necessary to apply environmental techniques to overcome this difficulty. It may be necessary, for example, to change the seating arrangements to place the dominant individual either on the periphery of the group or next to the co-ordinator where he may be more easily controlled. In extreme cases, the co-ordinator may have to assert his responsibility and challenge the member, demanding that he cease trying to control the group.

21. Instructors Concerned about the Teaching Role

The inclusion of instructors on committees has not worked out well either from the point of view of having the chart developed within a reasonable period of time or from the point of view of focusing as directly as possible on the requirements of the occupation. While there are benefits for the instructor in terms of his opportunity to learn more about the occupation and the views of its experts, his participation tends to retard the committee process. In cases where instructors must participate, it is frequently necessary to remind them that the issue is not what to teach or how to teach but the requirements of the occupation. Maintaining this perspective for instructors places a good deal of pressure on the co-ordinator, and it has been found that committees function more effectively if no instructors are present.

If there are facilities available, it is useful to have instructors and other observers stationed in an adjacent room from which they can view the proceedings through closed circuit T.V.

22. Persons Who Will Not Address the Co-ordinator

Sometimes committee members appear to misread the co-ordinator's role and consistently disregard him. Contributions must go through the co-ordinator if he is to maintain control of the process.

The co-ordinator may insist that all contributions be directed to him and refuse to write and put up any definitions that are not so directed. Or he can arrange to have the offenders located near him so they will have to address him while studying or commenting on the wall.

23. The Person Who Keeps Attention Away from the Wall

An occasional committee member will resent the idea of working with a wall. Few persons are used to working with this kind of format or with the brainstorming approach. An occasional member may keep his attention away from the wall when he feels the chart is developing in the wrong way or when he has lost sight of objectives. He will turn to discuss issues with other members, will make notes, will write out statements rather than view the statements on the wall, and, in effect, will do everything but use the wall as a focus for his participation.

It is possible to overcome this by changing the environment. If the offender is located in the back of the group, he may be relocated in the front near the co-ordinator. If he is already at the front and tends to turn around to face the group while working with the wall, it may be necessary to shift him to the back of the room so that he has to face the wall while talking to others. At times it may be necessary to point out to him exactly what he is doing and how it is affecting the process. He can be warned that he is eventually going to have others doing the same thing and that the committee may lose its focus. Frequently, this will change the person's attitude, although it may be necessary at times to remind him that he is a part of a group using the wall as a medium.

24. The DACUM Learning Enthusiast

Some persons have had an opportunity to learn about DACUM beforehand and have become over-enthused about its potential for occupational definition and learning. These might be persons who have been previously exposed to the DACUM to solicit their assistance in selecting committee members. Or they might be instructors (or prospective instructors) who expect to work with the system and are recruited as part of a committee.

These individuals at times tend to lose sight of the specific purpose of the committee. They may begin to think too far ahead and worry about structuring or sequencing when the skill definition process is not yet complete. They may not grasp the implications of each analysis step because they are too influenced by what they expect to see in the finished chart.

It is necessary to play down the contributions of such persons and recognize only those which are directly based on performance. If such a person is rather vocal and persistently disrupts proceedings with concerns about the training program, it is best to take directive action and explain to him in front of the group that this committee's concern is not with training, it is with accurate definition of the skills of the occupation. The training program will be the concern of another committee made up of persons more qualified for the task of specifying training.

APPENDIX H

SAMPLE WORKING DEFINITIONS OF OCCUPATIONS TO BE ANALYZED

Respiratory Therapist

Respiratory therapy workers, sometimes called inhalation therapy workers, treat patients with cardio-respiratory problems. Their duties involve the therapeutic use of medical gases, air and oxygen administering apparatus, environmental control systems, humidification and aerosols, drugs and medications, ventilatory control, postural drainage, chest physio-therapy and breathing exercises, respiratory rehabilitation, assistance with cardiopulmonary resuscitation, and the maintenance of natural, artificial, and mechanical airways.

Draftpersons

The drafter prepares clear, complete, and accurate working plans and detail drawings from rough sketches, specifications, and calculations of engineers, architects, and designers to be used for engineering or manufacturing purposes according to the specified dimensions. He utilizes knowledge of various machines, engineering practices, mathematics, building materials, and other physical sciences to complete the drawings.

Industrial Mechanic (DOT 626-630)

When a machine breaks down in a plant or factory, not only is the machine idle, but raw materials and human resources are wasted. It is the industrial mechanic's job to prevent these costly breakdowns and to make repairs as quickly as possible.

Industrial maintenance mechanics spend much time doing preventive maintenance. This includes keeping machines well oiled and greased, and periodically cleaning parts. The repairer regularly inspects machinery and checks performance. Tools such as micrometers, calipers, and depth gauges are used to measure and align all parts. For example, treadles on sewing machines in the apparel industry may need adjustment and gears and bearings may have to be aligned. By keeping complete and up-to-date records, mechanics try to anticipate trouble and service machinery before the factory's production is interrupted.

When repairs become necessary, the maintenance mechanic must first locate the specific cause of the problem. This challenge requires knowledge reinforced by experience. For example, after hearing a vibration from a machine, the mechanic must decide whether it is due to worn belts, weak motor bearings, or any number of other possibilities. Repairers often follow blueprints and engineering specifications in maintaining and fixing equipment.

After correctly diagnosing the problem, the maintenance mechanic dissembles the equipment, and then repairs or replaces the necessary parts. Hand and power tools usually are needed. The repairer may use a screwdriver and a wrench to take the door off an oven, or a crane to lift a printing press off the ground. Electronic testing equipment often is included in the mechanic's tools. Repairers use catalogs to order replacements for broken or defective parts. When parts are not readily available, or when a machine must be quickly returned to production, repairers may sketch a part that can be fabricated by the plant's machine shop.

The repairer reassembles and tests each piece of equipment after it has been serviced, for once it is back in operation, the machine is expected to work as if it were new.

SOURCE: Occupational Outlook Handbook, 1980-81 Edition. U.S. Department of Labor 2075

APPENDIX I

DEVELOPING QUALITY TASK STATEMENTS

Tasks may be defined as activities performed by an individual worker in order to accomplish some component of the occupational role. Task statements are concise descriptions of units of work as the worker functions in his/her occupation.

A task is a unit of work activity that constitutes a significant part of a duty. A combination of tasks usually form logical work activities necessary to perform a duty. Tasks have a definite beginning and ending point.

The task statement must be as clear as possible so that it is easily and correctly understood by workers and teachers in the occupational area. The terminology used must be consistent with current occupational usage, and must be unambiguous so that all workers will be able to apply the same interpretation.

It should be kept in mind that task statements are to be used for training workers, and for supervising workers as they perform on the job. Statements that are too general (e.g., "Meet the public") may be quite useless as a guide for planning instruction or evaluating performance. Statements that are extremely specific, or even trivial (e.g., "Count nuts and bolts") may require no special training procedures, or may involve very short bits of training time and therefore may not be helpful.

Task statements always describe a meaningful unit of work activity that is discrete, observable, performed within a limited period of time, and that results in a product, service, or decision. A job task is a worthwhile accomplishment that an employer or customer would be willing to pay for. A job task also represents a typical assignment that would be given to a worker in the occupation being analyzed. A task can always be broken down into two or more procedural steps.

The components of a task statement are:

VERB

The verb must be in the first person singular, active voice.
(e.g., select, prepare, maintain, direct, organize, produce)

OBJECT

The "object" is the thing acted upon by the worker.
(e.g., reports, equipment, records, customers)

QUALIFIER

Qualifiers are words or phrases used to limit or modify the task statement.
(e.g., ". . . precision measuring. . ." ". . . trouble shooting. . .")

Examples of the parts of task statements are:

1. Prepare budgets
   (verb) (object)

2. Maintain sickroom equipment
   (verb) (qualifier) (object)

3. Treat burn victims using first aid measures
   (verb) (object) (qualifier)

Guidelines for Developing Task Statements

a. The prefix, "The worker is able to . . ." is understood, not written.

b. The task statement begins with a precise action verb in the present tense (e.g., design, construct, rotate, repair, align, adjust).

c. Each task statement must describe an observable behavior. Thus, knowledge and attitudinal items, beginning with phrases such as "Know the principles of . . ." and "Appreciate the implications of . . ." are not permissible.

d. Receiving instructions from others should not be considered a task. Thus, attending meetings or conferences are not tasks. Neither is "Receive orders from supervisor."

e. Avoid statements such as "Be available when required for emergencies," "Relay forms." If a skill is not involved, it is not a task.

f. Avoid verbs that are indefinite as to meaning, such as "Work with . . ." "Handle. . ." and "Be responsible for. . ." If a person "works with" a program or resource, it should be determined what is actually being done when the activity takes place. There may actually be several tasks involved.

g. Task statements should represent independent skills and not simply supplement or expand on others (e.g., "Prepare daily work schedules" should not be used to supplement "Prepare work schedules").

h. In general, avoid multiple verbs in a task statement, unless several actions are always performed together. If two action words are needed, this usually indicates two skills are involved. In the case of remove and repair, use the more inclusive (repair) of the two.

i. Do not include unnecessary words such as "effectively," "carefully," or "appropriately" (as in "Use communication effectively" or "File materials carefully"). It is understood that workers are not going to be trained to be ineffective or careless.

j. Qualifiers should be used whenever necessary to clarify the meaning of the task.

k. Avoid vague qualifying phrases such as "when appropriate," "as required," or "in accordance with regular procedures."

l. Each task statement must be capable of standing alone. A statement such as "Prepare other materials" might appear to be reasonable if it appears at the end of a series of related task, but it cannot be understood by itself, so it should not be used.

m. Repetition is acceptable. If "adjust" is the appropriate verb for many task statements, use it. Do not attempt to find alternatives simply for the sake of style.

n. Short words should be used in preference to long words or expressions (e.g., "Maintain a filing system" NOT "Take necessary action relative to setting up a system for the storage and retrieval of records and instructional materials").

o. Avoid the use of "etc." If an additional thought needs to be included, express it (e.g., NOT "Maintain a system for controlling dangerous substances, etc." but "Maintain a security system for controlling the use of drugs and hazardous equipment").

p. Avoid the use of tools and equipment statements that merely support task performance. The use of tools in and of themselves is not a task activity but a means to achieving the task.

q. Include only one task in a single statement.

On the following page is a list of sample action verbs that may be reproduced and used as a handout when working with DACUM committees.

SAMPLE ACTION VERBS

Supervisory and Managerial Jobs

Advise
Analyze
Appraise
Approve
Assess
Assign
Compare
Conduct
Contact
Counsel
Determine
Diagnose
Draft
Establish
Estimate
Forecast
Implement
Initiate
Interpret
Interview
Investigate
Maintain
Manage
Monitor
Negotiate
Observe
Orient
Participate
Perform
Plan
Prepare
Process
Recommend
Review
Schedule
Sign
Study
Submit
Supervise
Verify

Information-Collection Jobs

Analyze
Acertain
Audit
Calculate
Check
Compile
Compute
Confer
Consult
Count
Diagnose
Gather
Identify
Inspect
Interview
Inventory
Locate
Measure
Observe
Obtain
Proof
Receive
Review
Verify
Weigh

Decision-Making Jobs

Approve
Compare
Decide
Determine
Estimate
Evaluate
Judge
Rate
Test

Production and Controlling Jobs

Address
Adjust
Apply
Arrange
Attach
Clean
Compose
Deposit
Design
Develop
Disassemble
Distribute
Edit
Endorse
File
Fit
Greet
Grind
Install
Instruct
Load
Lubricate
Make
Maintain
Notify
Open
Paint
Phone
Post
Process
Rebuild
Recommend
Remove
Repair
Replace
Reprimand
Revise
Rewire
Rotate
Schedule
Select
Set
Sign
Solder
Sort
Straighten
Submit
Train
Transcribe
Type
Weld
Write

APPENDIX J

WORKSHOP EVALUATION

Position ______________________________ Date ____________

The purpose of this evaluation is to provide feedback for the workshop leaders to use in planning and conducting future workshops. Please complete the following checklist by marking the most appropriate response--Strongly Agree (SA), Agree (A), Disagree (D), Strongly Disagree (SD). Your comments on the last three questions would also be appreciated.

	SA	A	D	SD
1. Information given to you about the workshop prior to your arrival was sufficient..............				
2. The workshop moved in a smooth businesslike manner				
3. The workshop leaders carried out their roles in a positive, knowledgeable manner....................				
4. The workshop was interesting and informative......				
5. Sufficient time was allocated for completing the workshop activities.............................				
6. The workshop facilities were adequate............				
7. The workshop location was suitable................				
8. Arrangements for meals and breaks were sufficient.				
9. My participation in this workshop was a worthwhile endeavor..............................				
10. I would recommend participation in similar workshops to fellow workers......................				

11. The weaknesses of this workshop were:

12. The strengths of this workshop were:

13. My reaction to DACUM as a process for identifying tasks important to vocational and technical instruction is:

THANK YOU!

APPENDIX K

VERIFICATION INSTRUMENTS AND SAMPLE COVER LETTERS

INDUSTRIAL MECHANICS TECHNOLOGY DACUM VERIFICATION SURVEY

On March 2-3, 1982, a DACUM was conducted at Trident Technical College for the Industrial Mechanics Technology program involving representation of ten local industries. From the panel's input, a draft DACUM chart was prepared, and a verification survey based on the identified competencies was developed and sent to twenty-six persons identified either as incumbent industrial mechanics or supervisors of industrial mechanics, including the original ten DACUM participants. (The firms participating in the verification process are identified in appendix 2.) Twenty-one responses were received and are included in the data tabulation.

Data from the survey is presented by mean response to each question and by number of respondents to each category of each question (appendix 1.)

Trident Technical College is committed to develop individualized competency-based instruction that will assist learners to achieve competence through effective training. With the input of expert practitioners and supervisors to identify those tasks which are most important and which truly make a difference for entering workers, this survey data can provide a sound basis for decision making in program and learning material development.

TRIDENT TECHNICAL COLLEGE

Survey Number________

1982 Industrial Mechanics Survey

The purpose of this survey is to identify the most important tasks Industrial Mechanics in the Trident area perform. This information will help define the skills an Industrial Mechanics graduate needs which will be used to develop the curriculum for the new Industrial Mechanics program. Please read the directions carefully and answer every question.

Instructions:

The questionnaire contains a list of tasks divided into 12 major groups (A through L) which relate to the occupation of Industrial Mechanic. We need your response to three major questions about each task:

1. How important is the performance of the task in the job of an Industrial Mechanic?
2. How frequently do you perform the task? (or how frequently do those Industrial Mechanics whom you supervise perform the task?)
3. Is the task expected of a beginning Industrial Mechanic?

Answer these questions by completing the following steps:

1. For each task rate the importance of the performance of that task to the job of the Industrial Mechanic by circling one response under column 1.
2. For each task indicate how often the task is performed by circling one response under column 2.
3. For each task indicate if this task would be expected to be performed by a beginning Industrial Mechanic by circling one response in column 3.

Be sure to circle one response under each column for every task.

Please feel free to add any additional tasks or general comments.

MEAN RESPONSE
N=21

Task Statements	Importance of Task Column 1 Essential 3 · Imp. 2 · Not Imp. 1 · Don't know 0	Frequency of Performance of Task Column 2 Frequently 3 · Sometimes 2 · Never 1 · Don't know 0	Entry Level Column 3 Yes 2 · No 1 · Don't know 0
Category A: Use Hand and Power Tools			
1. Select proper tools	2.85	3.00	1.90
2. Use tools safely	2.90	2.95	1.90
3. Use basic hand tools	2.90	2.95	1.95
4. Operate hand power tools	2.42	2.71	1.90
5. Maintain tools	2.60	2.66	1.66
6. Use precision hand tools	2.23	2.26	1.47
7. Use precision measuring instruments	2.25	2.30	1.57
8. Operate general machine shop equipment	2.15	2.30	1.47
9. Use diagnostic equipment	1.90	2.05	1.04
Category B: Repair Equipment			
1. Use maintenance manuals	2.71	2.57	1.85
2. Use trouble shooting techniques	2.71	2.66	1.60
3. Use proper fastening techniques	2.28	2.52	1.77
4. Analyze cause of breakdown	2.38	2.52	1.52
5. Prepare parts list including specifications	1.90	2.07	1.37
6. Replace bearings	2.71	2.85	1.80
7. Repair/replace mechanical seals	2.57	2.61	1.61
8. Repair pumps	2.42	2.52	1.61
9. Repair compressors	2.23	2.23	1.19
10. Repair power transmission equipment	2.19	2.38	1.52

Task Statements	Importance of Task Column 1 Essential 3	Imp. 2	Not Imp. 1	Don't know 0	Frequency of Performance of Task Column 2 Frequently 3	Sometimes 2	Never 1	Don't know 0	Entry Level Column 3 Yes 2	No 1	Don't know 0
Category A: Use Hand and Power Tools											
1. Select proper tools	18	3	0	0	21	0	0	0	18	2	0
2. Use tools safely	19	2	0	0	20	1	0	0	19	2	0
3. Use basic hand tools	19	2	0	0	20	1	0	0	20	1	0
4. Operate hand power tools	13	8	0	0	17	4	0	0	19	2	0
5. Maintain tools	13	6	1	0	14	7	0	0	14	7	0
6. Use precision hand tools	7	12	2	0	6	14	0	0	9	10	0
7. Use precision measuring instruments	6	13	1	0	6	14	0	0	12	9	0
8. Operate general machine shop equipment	5	13	2	0	6	14	0	0	10	11	0
9. Use diagnostic equipment	1	16	3	0	1	19	0	0	1	20	0
Category B: Repair Equipment											
1. Use maintenance manuals	15	6	0	0	12	9	0	0	17	3	0
2. Use trouble shooting techniques	15	6	0	0	14	7	0	0	13	6	0
3. Use proper fastening techniques	9	11	1	0	12	8	1	0	14	4	0
4. Analyze cause of breakdown	9	11	1	0	11	10	0	0	10	9	0
5. Prepare parts list including specifications	3	13	5	0	4	14	2	0	7	12	0
6. Replace bearings	15	6	0	0	18	3	0	0	17	4	0
7. Repair/replace mechanical seals	12	9	0	0	13	8	0	0	13	8	0
8. Repair pumps	10	10	1	0	11	10	1	0	13	8	0
9. Repair compressors	7	12	2	0	6	14	1	0	5	15	0
10. Repair power transmission equipment	8	9	4	0	9	11	0	0	11	10	0

BARBER JOB/TASK ANALYSIS AND LETTERS

The National Association of
Boards of Barber Examiners
of America

BARBER JOB/TASK ANALYSIS

Why We Need YOUR Help

The National Association of Boards of Barber Examiners of America is conducting a national study to determine the tasks performed by barbers to effectively carry out their duties and responsibilities.

The study requires the careful identification and verification of the many tasks performed by barbers on a national level. Once the tasks have been identified, we will have a better basis for developing fair and valid barber examinations. The knowledge and experience you have gained by your direct involvement in most, if not all, of these tasks make you uniquely qualified to advise us on the importance, frequency and criticality of each task. Your individual responses will be held in strict confidence, as only group responses will be reported.

You have been carefully selected as a qualified respondent, and your input will contribute to the development of a valid examination for barbers.

Please complete this analysis within five working days. Return the completed survey to the person distributing the survey or place it in the stamped and addressed envelope that has been provided. As a small expression of our appreciation for completing this analysis, we will send you a summary of our findings.

THANKS VERY MUCH FOR YOUR ASSISTANCE.

PART I - TASK STATEMENTS

Instructions: Please read very carefully!

On the pages which follow you will find a list of task statements clustered into 23 major categories (A through P) which relate to the occupation of barbering
We need your personal reaction to three major questions about each task statement:

a. How important is the performance of the task in your job as a barber?

b. How frequently do you perform the task?

c. How critical is the task?

Answer these questions by completing the following steps:

1. For each task in Categories A through P indicate how important you believe performance of the task is in your job as a barber. In the "Importance of Task column choose and circle the number which most accurately reflects the importance of that task. If you do not perform some of the tasks, please circle th number which indicates how important you believe those tasks are to the overall occupation of barbering. Use the scale below to rate the importance of each task:

5 = Of Great Importance	Performance is important to the occupation of barbering.
4	
3	
2	
1	
0 = Of No Importance	Performance makes no contribution to the occupation of barbering.

2. For each of the tasks in Categories A through P (except those you judged to be of no importance), indicate the frequency of performance. Use the scale be to indicate the frequency of the task:

5 = Frequently Performed	The task is frequently performed.
4	
3	
2	
1	
0 = Never Performed	The task is never performed.

3. For each of the tasks in Categories A through P, indicate the criticality of the task by determining its importance when performed on the consumer. Use the scale below to indicate the criticality:

5 = Very Critical	The task is critical to the consumer if not performed properly.
4	
3	
2	
1	
0 = Not Critical	The task is not critical to the consumer.

4. Repeat Steps No. 1, No. 2 and No. 3 for each of the categories.

5. Add any statements to Categories A through P that describe other tasks that you have performed or that you feel need to be performed by barbers which are not listed.

6. Check the inventory to see if you have responded to all questions for each statement (except for those tasks which you judged to be of no importance).

BARBER JOB/TASK ANALYSIS

NOTE: PLEASE BE SURE YOU HAVE READ THE ABOVE INSTRUCTIONS CAREFULLY BEFORE PROCEEDING.

	No. 1	No. 2	No. 3
	Importance of Task	Frequency of Performance	Criticality
	How important is the performance of this task in your job as a barber?	How frequently do you perform this task?	How critical is the performance of this task to the consumer?
Task Statements	(Circle one response)	(Circle one response)	(Circle one response)
CATEGORY A: Perform Haircuts	Great Importance ... No Importance	Frequently Performed ... Never Performed	Critical ... Not Critical
1. Comply with required sanitary procedures	5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2 1 0
2. Protect patron	5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2 1 0
3. Consult with patron	5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2 1 0
4. Prepare the patron	5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2 1 0
5. Cut the hair with clippers, shears or razor	5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2 1 0
6. Taper the hair with clippers, shears or razor	5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2 1 0
7. Layer the hair with clippers, shears or razor	5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2 1 0
8. Thin the hair with thinning shears, shears or razor	5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2 1 0
9. Outline the hair with clippers, shears or razor	5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2 1 0
10. Clean (edge) the neck with clippers or razor	5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2 1 0
11. Perform children's haircuts	5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2 1 0
12. Perform ladies' haircuts	5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2 1 0
13. Perform men's haircuts	5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2 1 0
14. Dress the hair	5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2 1 0
CATEGORY B: Perform Hairstyling			
1. Comply with required sanitary procedures	5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2 1 0
2. Protect patron	5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2 1 0
3. Consult with patron	5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2 1 0

Task Statements	No. 1 Importance of Task How important is the performance of this task in your job as a barber? (Circle one response)						No. 2 Frequency of Performance How frequently do you perform this task? (Circle one response)						No. 3 Criticality How critical is the performance of this task to the consumer? (Circle one response)					
	Great Importance					No Importance	Frequently Performed					Never Performed	Critical					Not Critical
CATEGORY N: Comply With Laws and Rules																		
1. Obtain knowledge of federal and state laws and rules	5	4	3	2	1	0	5	4	3	2	1	0	5	4	3	2	1	0
2. Implement appropriate laws and rules	5	4	3	2	1	0	5	4	3	2	1	0	5	4	3	2	1	0
3. Maintain communications with the Barber Board	5	4	3	2	1	0	5	4	3	2	1	0	5	4	3	2	1	0
CATEGORY O: Maintain Patron Records																		
1. Establish patron profile	5	4	3	2	1	0	5	4	3	2	1	0	5	4	3	2	1	0
2. Maintain patron profile	5	4	3	2	1	0	5	4	3	2	1	0	5	4	3	2	1	0
3. Prepare product sales record	5	4	3	2	1	0	5	4	3	2	1	0	5	4	3	2	1	0
4. Prepare and maintain patron service record	5	4	3	2	1	0	5	4	3	2	1	0	5	4	3	2	1	0
5. Maintain periodic patron communications	5	4	3	2	1	0	5	4	3	2	1	0	5	4	3	2	1	0
CATEGORY P: Continue Education																		
1. Attend seminars and workshops	5	4	3	2	1	0	5	4	3	2	1	0	5	4	3	2	1	0
2. Participate in professional training courses	5	4	3	2	1	0	5	4	3	2	1	0	5	4	3	2	1	0
3. Subscribe to and read professional and trade journals	5	4	3	2	1	0	5	4	3	2	1	0	5	4	3	2	1	0
4. Participate in professional organizations	5	4	3	2	1	0	5	4	3	2	1	0	5	4	3	2	1	0
5. Apply acquired knowledge	5	4	3	2	1	0	5	4	3	2	1	0	5	4	3	2	1	0

JOE GIORDANO
PRESIDENT
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BALTIMORE, MD 21207

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~~1ST VICE PRESIDENT~~ Acting President
ROBERT LUCAS BUILDING
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2ND VICE PRESIDENT
1400 E. WASHINGTON AVE.
MADISON, WI 53702

JOSEPH SWIEZYNSKI
3RD VICE PRESIDENT
29 UNION SQUARE
MILFORD, NH 03055

The National Association of
Boards of Barber Examiners
of America

EDWIN C. JEFFERS, SECRETARY-TREASURER
65 SOUTH FRONT STREET — SUITE 306
COLUMBUS, OH 43215
(TEL.: 1-614-466-5003)

JERREL DAILEY
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MAGNOLIA, AR 71753

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PARLIAMENTARIAN
306 NE 1ST
MIAMI, FL 33132

JAMES D. KNAUSS
DIRECTOR OF EDUCATION
1021 O STREET - A551
SACRAMENTO, CA 95814

September 11, 198_

Dear Professional Barber:

The National Association of Boards of Barber Examiners is conducting a survey for the purpose of developing a job/task analysis of barbering. We have requested the Board of Barber Examiners in your State to nominate well-qualified barbers to assist us with this important research program. Your Barber Board has determined that you meet the standards of our selection criteria and has nominated you to participate in the survey. By nominating you, that Board has recognized you as one of the most capable barbers in your State.

We are committed to the development of improved training material for barbers, a job-related training program for barbers, and the administration of a certified job/task related examination for licensing barbers.

We request you take the time now or within the next five working days to complete the enclosed "Job/Task Analysis Survey". Your response to the survey will contribute significantly to our research effort and more importantly will help improve the program for the licensing of barbers. Your response will be kept confidential and only group responses will be reported.

Your assistance as a professional barber will be appreciated; and if we can ever be of assistance to you, please feel free to call on us.

Very truly yours,

THE NATIONAL ASSOCIATION OF BOARDS OF BARBER EXAMINERS
OF AMERICA

James D. Knauss

James D. Knauss, Director of Examinations

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JDK:gb/Encl.

JOE GIORDANO
~~PRESIDENT~~ –
101 LONG PINE PL., APT. 1-C
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The National Association of Boards of Barber Examiners of America

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306 NE 1ST
MIAMI, FL 33132
JAMES D. KNAUSS
DIRECTOR OF EDUCATION
1021 O STREET - A551
SACRAMENTO, CA 95814

September 11, 198_

Dear Professional Barbers:

We thank you for the taking of your valuable time to assist us in this project by completing a job/task survey relating to barbering.

We request that you give us your name and address in the space provided below in order that we may have a record of the persons surveyed and in order that we can send you a copy of the completed report.

Your response will be kept confidential and only group responses will be reported. Please furnish your name and address as follows:

____
(Name)

____
(Address)

____
(City) (State) (Zip)

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ADMINISTRATOR TASK INVENTORY AND LETTERS

THE CENTER FOR VOCATIONAL EDUCATION
The Ohio State University • 1960 Kenny Road • Columbus, Ohio 43210
Tel (614) 486-3655 Cable CTVOCEDOSU/Columbus, Ohio

ADMINISTRATOR TASK INVENTORY

Why We Need YOUR Help

In cooperation with the USOE Bureau of Occupational and Adult Education, we are conducting a national study to determine the competencies needed by local administrators of vocational education to effectively carry out their duties and responsibilities.

The study requires the careful identification and verification of the many tasks performed by local administrators working at both the secondary and post-secondary levels. Once the tasks have been identified, we will begin to develop competency-based instructional materials designed specifically to help meet the training needs of vocational administrators. The knowledge and experience you have gained by your direct involvement in most, if not all, of these tasks make you uniquely qualified to advise us on both the importance of each task and on the degree of need for training which exists. Your individual responses will be held in strict confidence, as only group responses will be reported.

You have been carefully selected as a qualified respondent, and your input will contribute to the development of effective training materials for local administrators. Should you wish to contribute even further to this curriculum development effort, please provide all of the information requested about your interest and areas of expertise in Part II of this instrument.

Please try to complete this inventory within five working days. A stamped, self-addressed envelope is provided for your convenience in returning the inventory. As a small expression of our appreciation for completing this inventory, we will send you a summary of our findings.

THANKS VERY MUCH FOR YOUR ASSISTANCE.

BEST COPY AVAILABLE

PART I - TASK STATEMENTS

Instructions: Please read very carefully!

On the pages which follow you will find a list of task statements clustered into eight major categories (A through I) which may relate to the administration of local vocational education programs. We need your personal reaction to two major questions about each task statement:

a. How important is the performance of the task in your job as a local administrator?

b. What degree of training do most local administrators need in order to effectively perform the task?

Answer these questions by completing the following steps:

1. For each task in Category A indicate how important you believe performance of the task is in your job as a local administrator. In the "Importance of Task" column choose and circle the number which most accurately reflects the importance of that task. *If* you do not perform some of the tasks because they are another administrator's responsibility at your school, please circle the number which indicates how important you believe those tasks are to the overall administration of vocational education at your school. *If* a teacher or other non-administrator independently performs some of the tasks listed, mark them as of no importance to your job as a local administrator. Use the scale below to rate the importance of each task:

5 = Of Great Importance	Performance is critical to program operation.
4	
3	
2	
1	
0 = Of No Importance	Performance makes no contribution to program operation.

2. Add any statements to Category A that describe other tasks that you have performed, or that you feel need to be performed by local administrators which are not listed.

3. For each of the statements in the category (except those you judged to be of no importance), indicate the degree of training needed. In the "Degree of Training Needed" column, indicate the extent to which the task requires that most administrators who perform the task obtain training to successfully and efficiently perform it. Use the scale below to indicate the degree of training needed.

5 = Great Need	The task requires a great deal of training for the administrator.
4	
3	
2	
1	
0 = No Need	The task requires no training.

4. Repeat steps No. 1, No. 2, and No. 3 for each of the remaining categories.

5. Check the inventory to see if you have responded to both questions for each statement (except for those tasks which you judged to be of no importance).

ADMINISTRATOR TASK INVENTORY

NOTE: PLEASE BE SURE YOU HAVE READ THE ABOVE INSTRUCTIONS CAREFULLY BEFORE PROCEEDING.

Importance of Task

How important is the performance of this task in your job as a local administrator?

(Circle one response)

Degree of Training Needed

What degree of training do most administrators need in order to effectively perform this task?

(Circle one response)

Task Statements

	CATEGORY A: PROGRAM PLANNING, DEVELOPMENT, AND EVALUATION	Great Importance					No Importance	Great Need					No Need
1.	Survey student and parent interests.	5	4	3	2	1	0	5	4	3	2	1	0
2.	Collect and analyze manpower needs assessment data.	5	4	3	2	1	0	5	4	3	2	1	0
3.	Direct occupational task analysis for use in curriculum development.	5	4	3	2	1	0	5	4	3	2	1	0
4.	Direct the identification of entry-level requirements for jobs.	5	4	3	2	1	0	5	4	3	2	1	0
5.	Involve community representatives in program planning and development.	5	4	3	2	1	0	5	4	3	2	1	0
6.	Obtain state and federal services and resources for program development.	5	4	3	2	1	0	5	4	3	2	1	0
7.	Cooperate with district, county, regional, and state agencies in developing and operating vocational programs.	5	4	3	2	1	0	5	4	3	2	1	0
8.	Prepare annual program plans.	5	4	3	2	1	0	5	4	3	2	1	0
9.	Prepare and update long-range program plans.	5	4	3	2	1	0	5	4	3	2	1	0
10.	Develop overall vocational program goals.	5	4	3	2	1	0	5	4	3	2	1	0

	Task Statements	Importance of Task How important is the performance of this task in your job as a local administrator?. *(Circle one response)*						Degree of Training Needed What degree of training do most administrators need in order to effectively perform this task? *(Circle one response)*					
		Great Importance					No Importance	Great Need					No Need
11.	Coordinate district curriculum development efforts.	5	4	3	2	1	0	5	4	3	2	1	0
12.	Approve courses of study.	5	4	3	2	1	0	5	4	3	2	1	0
13.	Establish school admission and graduation requirements.	5	4	3	2	1	0	5	4	3	2	1	0
14.	Recommend program policies to the administration and board.	5	4	3	2	1	0	5	4	3	2	1	0
15.	Implement local board and administrative policies.	5	4	3	2	1	0	5	4	3	2	1	0
16.	Interpret and apply state and/or federal vocational education legislation.	5	4	3	2	1	0	5	4	3	2	1	0
17.	Interpret and apply other relevant state and federal legislation (such as CETA).	5	4	3	2	1	0	5	4	3	2	1	0
18.	Develop plans for evaluating instructional program.	5	4	3	2	1	0	5	4	3	2	1	0
19.	Direct self-evaluation of the district vocational programs.	5	4	3	2	1	0	5	4	3	2	1	0
20.	Involve external evaluation personnel in assessing program effectiveness.	5	4	3	2	1	0	5	4	3	2	1	0
21.	Design and select instruments for evaluating the instructional program.	5	4	3	2	1	0	5	4	3	2	1	0
22.	Evaluate the effectiveness of the instructional program.	5	4	3	2	1	0	5	4	3	2	1	0
23.	Initiate student and employer follow-up studies.	5	4	3	2	1	0	5	4	3	2	1	0
24.	Analyze student and employer follow-up studies.	5	4	3	2	1	0	5	4	3	2	1	0

25.	Recommend curriculum revisions based on evaluation data.	5	4	3	2	1	0	5	4	3	2	1	0
26.	Assess student testing and grading procedures.	5	4	3	2	1	0	5	4	3	2	1	0
27.	Analyze the school and community's feelings toward educational change.	5	4	3	2	1	0	5	4	3	2	1	0
28.	Write proposals for the funding of new programs and the improvement of existing programs.	5	4	3	2	1	0	5	4	3	2	1	0
29.	Coordinate local demonstration, pilot, and exemplary programs.	5	4	3	2	1	0	5	4	3	2	1	0
30.	Design and oversee local research studies.	5	4	3	2	1	0	5	4	3	2	1	0
31.	Interpret and use research results for program development and improvement.	5	4	3	2	1	0	5	4	3	2	1	0
32.	Develop supplemental/remedial instructional programs to meet student needs.	5	4	3	2	1	0	5	4	3	2	1	0

33. ______________________________

34. ______________________________

CATEGORY B: INSTRUCTIONAL MANAGEMENT

1.	Establish instructional program entry and completion requirements.	5	4	3	2	1	0	5	4	3	2	1	0
2.	Establish student rules and policies (such as attendance and discipline).	5	4	3	2	1	0	5	4	3	2	1	0
3.	Enforce student rules and policies.	5	4	3	2	1	0	5	4	3	2	1	0
4.	Design and oversee student progress reporting procedures.	5	4	3	2	1	0	5	4	3	2	1	0
5.	Approve student promotions/reassignments.	5	4	3	2	1	0	5	4	3	2	1	0
6.	Prepare a master schedule of course offerings.	5	4	3	2	1	0	5	4	3	2	1	0
7.	Guide staff in selecting and using effective instructional strategies (such as individualized instruction).	5	4	3	2	1	0	5	4	3	2	1	0

PART II. GENERAL INFORMATION

Instructions: Read each item carefully and write, or check where appropriate, your responses in the blanks provided.

1. Indicate your present job title:____

2. Indicate which of the following best describes your school:

( ) secondary vocational
( ) secondary comprehensive (vocational and academic)
( ) postsecondary vocational
( ) postsecondary comprehensive (vocational and academic)

3. Indicate the number of vocational programs under your administration: ______________ programs.

4. Indicate the number of vocational teachers and students under your administration: __________ teachers, __________ students.

5. Please indicate whether you are employed by a school district serving:

_____ a. A rural or urban community of less than 100,000 population.
_____ b. An urban community of 100,000 population or more.

6. What percentage of your time is devoted to the administration of vocational-technical education? __________%

7. Indicate the total number of years experience that you have had as an administrator of vocational-technical education programs: ________ years.

8. In the spaces below, please indicate the:

a. number of years you have spent teaching vocational subjects:________ years
b. number of years you have spent teaching non-vocational subjects:________ years

9. In the space provided, please indicate:

a. whether you would be interested in serving as a consultant to develop instructional packages for administrators?
_____ Yes _____ No If yes, please indicate your particular area(s) of strength and expertise:
(1)______________________________ (2)______________________________

b. whether you have previously developed competency-based instructional materials?
_____ Yes _____ No If yes, what type and how many?______________________________
____

Optional

10. Comments: (Types of materials you think should be developed, how you would like to help, etc.)

THANK YOU VERY MUCH FOR COMPLETING THIS INVENTORY. PLEASE PLACE IT IN THE ENVELOPE THAT HAS BEEN PROVIDED AND MAIL TO:

Robert E. Norton
The Center for Vocational Education
The Ohio State University
1960 Kenny Road
Columbus, Ohio 43210

THE CENTER FOR VOCATIONAL EDUCATION
The Ohio State University • 1960 Kenny Road • Columbus, Ohio 43210
Tel: (614) 486-3655 Cable: CTVOCEDOSU/Columbus, Ohio

At our request, your state director of vocational education has nominated you as an administrator who is well-qualified to assist us with an important research task. By nominating you, in accordance with our selection criteria, he has identified you as one of the most capable local administrators of vocational education in your state. We hope you will find time in your busy schedule to give us the type of information that only a person in your position can provide.

We are committed to develop individualized competency-based instructional packages that will help present and future administrators achieve greater competence through effective training. Before we can develop such materials, we must have the help of expert practitioners in identifying the competencies which really make a difference, and for which training is most important.

Won't you please take the time now or in the next five working days to complete the enclosed "Administrator Task Inventory"? Your responses to the inventory will contribute significantly to our research efforts, and more importantly, help establish a better basis upon which future training materials and programs for local administrators can be developed. We have enclosed an Ohio State University pen for your convenience in responding to the inventory.

Your professional assistance in this important endeavor will be very much appreciated and if I can ever be of assistance to you, I hope you will feel free to contact me.

Sincerely,

Robert E. Norton
Project Director

REN/dlp

Enclosure

NATIONAL COUNCIL OF LOCAL ADMINISTRATORS

of Vocational, Technical and Practical Arts Education

a division of American Vocational Association

Dear Vocational Director:

You are one of 100 administrators in the nation who have been chosen to verify the enclosed list of administrator tasks. This "Administrator Task Inventory" was developed by the Center for Vocational Education as an initial step in a USOE sponsored project. I am familiar with the purpose of this project and feel that it merits your time and attention.

Your reactions to each of the task statements on this inventory will be used to determine those tasks which are important to local vocational administrators and those which are not. Once all the reactions have been compiled and verified, the Center Staff will begin to develop competency-based modularized materials which will deliver upon the areas identified.

This is an opportunity for you to make input to a research and development project that should result in instructional materials that will be of use to many present and future administrators. I urge you to complete the enclosed questionnaire and return it to The Center as soon as you can.

Sincerely yours,

Dave Berryman

David W. Berryman
President, NCLA

DWB:rb

BEST COPY AVAILABLE

THE CENTER FOR VOCATIONAL EDUCATION
The Ohio State University • 1960 Kenny Road • Columbus, Ohio 43210
Tel: (614) 486-3655 Cable: CTVOCEDOSU/Columbus, Ohio

Upon the recommendation of your state director of vocational education, we recently asked if you would be willing to assist us with a USOE funded administrator research project. Recently we sent you an "Administrator Task Inventory" and asked for your cooperation in reviewing and responding to the task statements contained in it.

If you have not yet completed the Inventory, we hope that within the next few days you will take some time to complete and mail it. If you have misplaced the Inventory and need another copy, please write or call me at (614-486-3655). We will be happy to send another copy. Your expert help is needed to assist us in identifying and verifying the competencies which are most important and for which training is needed.

If you have already mailed the completed Inventory to us, please accept this letter as a note of thanks. Your responses will contribute significantly to our research efforts and are very much appreciated.

Sincerely,

Robert E. Norton
Project Director

REN:lv

LETTER SENT TO 60 ADMINISTRATORS WHO FAILED TO RESPOND TO FIRST MAILING

THE CENTER FOR VOCATIONAL EDUCATION
The Ohio State University • 1960 Kenny Road • Columbus, Ohio 43210
Tel: (614) 486-3655 Cable: CTVOCEDOSU/Columbus, Ohio

We recently mailed you an "Administrator Task Inventory" and asked for your assistance in verifying the administrator task statements contained in it. You were one of a select group of local administrators recommended by state directors for vocational education to assist us in this USOE-funded research project.

We have received many responses to the inventory, (over 80%) and they promise to be a tremendous aid to our research efforts. However, we feel that a 100 percent response is needed to positively verify these task statements and we are hoping for everyone's help.

Now that school is out, we hope you can find some time today to complete this Inventory. We feel that your input is very important to our findings. Your responses will help us to develop individualized competency-based instructional materials that should be a help to you and to other administrators.

We are enclosing another questionnaire in case the first one we sent has been mislaid. We hope that you will help us by finding some time to complete it today.

Thank you for your assistance.

Sincerely,

Robert E. Norton
Project Director

REN/dlp

Enclosures

TASK RATING FORM

A	1	2	3	4	5	6	7	8	9	10	11	12
	13	14	15	16	17	18	19	20	21	22	23	24
B	1	2	3	4	5	6	7	8	9	10	11	12
	13	14	15	16	17	18	19	20	21	22	23	24
C	1	2	3	4	5	6	7	8	9	10	11	12
	13	14	15	16	17	18	19	20	21	22	23	24
D	1	2	3	4	5	6	7	8	9	10	11	12
	13	14	15	16	17	18	19	20	21	22	23	24
E	1	2	3	4	5	6	7	8	9	10	11	12
	13	14	15	16	17	18	19	20	21	22	23	24
F	1	2	3	4	5	6	7	8	9	10	11	12
	13	14	15	16	17	18	19	20	21	22	23	24

G	1	2	3	4	5	6	7	8	9	10	11	12
	13	14	15	16	17	18	19	20	21	22	23	24
H	1	2	3	4	5	6	7	8	9	10	11	12
	13	14	15	16	17	18	19	20	21	22	23	24
I	1	2	3	4	5	6	7	8	9	10	11	12
	13	14	15	16	17	18	19	20	21	22	23	24
J	1	2	3	4	5	6	7	8	9	10	11	12
	13	14	15	16	17	18	19	20	21	22	23	24
K	1	2	3	4	5	6	7	8	9	10	11	12
	13	14	15	16	17	18	19	20	21	22	23	24
L	1	2	3	4	5	6	7	8	9	10	11	12
	13	14	15	16	17	18	19	20	21	22	23	24

APPENDIX L

USES OF THE DACUM CHART

There are many ways that a DACUM chart can be used. It has been produced by experts in the field and is practical, rather than theoretical. Eleven major applications of the DACUM chart illustrate its practicality.

1. It can be used for developing a curriculum. Specific performances that are needed to be successful within an occupational field are identified. Educators can take these performances, write objectives, create learning activities, and evaluate students' success in achieving them.

2. A DACUM chart can be used for academic advising and counseling. Incoming students can be given a copy of the chart and get a whole picture of what is needed to be successful in that occupation. Advisors or counselors can walk through the chart with them, explaining the purpose and importance of each performance statement. The student then enters into an occupational field or technology with a better understanding of what is expected of him/her in the learning process.

3. The DACUM chart is an excellent recruiting tool. In various college fliers, at high school visitations and other recruiting kinds of activities, charts can be presented showing that the college has thought through what is needed to be successful in an occupation and has included it within the curriculum. Students will not be met with surprises, because the details of what they will be learning have been spelled out in the chart in advance.

4. A DACUM chart can be used for granting credit for prior work experience. Because specific performances are identified it is easier to assess incoming students and their experience against the occupation to be pursued.

5. Evaluating transfer credit is easier with a DACUM chart. Again, because the specific performances have been identified, incoming credit can be assessed and equated to various performance statements. The decision can then be made whether credit should or should not be granted.

6. A DACUM chart serves as both a formative and summative evaluation. As a student is working through a program, they will be able to see which performances they have already accomplished and which remain. They will know at the end of a program whether or not they have accomplished all the performances stated on the chart and know how successfully they have achieved completion of the entire program. Some institutions give a copy of the chart as part of the final achievement record or diploma.

SOURCE: Taken from "Keeping Occupational Education Current, Formation and Evaluation - DACUM." Paper presented by Jack Harris, Stark Technical College, at the American Technical Education Association Great Lakes Regional Conference, Toledo, Ohio, 1982.

7. Students can use the chart when interviewing for jobs. They can show the chart to their perspective employer and show which performances have been included in their training or educational program. The employer, rather than just knowing the student's grade point average, will know what has been covered in that occupation and understand better what the student has been exposed to and should be capable of doing.

8. Advisory committees can assess the college curriculum, using the DACUM chart. They can look at specific performance statements and let the college know whether these continue to fill a current need in that occupation or have changed. They can easily help the college update its curricula by letting them know of new performances that are needed since the DACUM gives them the specifics rather than just a general description of the technology.

9. A DACUM chart can be used by the college for reviewing its own curricula. The various components needed to make up the entire curriculum have been identified and presented and the college can evaluate whether those performances are contained within their curricula and make necessary changes.

10. Faculty skills can be evaluated using a DACUM chart. Because specific performances for the occupational field have been identified, faculty members teaching in that technology can be assessed relative to their knowledge and/or ability to teach them to the students.

There are many benefits that result from developing and utilizing a DACUM chart for an occupational analysis. One college has identified four specific benefits for that college. First, they felt that their advisory committees were stronger, because some members of the advisory committees had participated in the development of their DACUM charts. There was a stronger sense of ownership of the college programs and a willingness to donate time and energy as required to implement the charts within the curricula of the college. The second benefit has been that industry feels it is supporting specific skill development. Because of this feeling of support, they are more willing to donate funds and equipment to the college for fulfilling the educational goals. A third benefit was that of articulation. It was easier to avoid duplication effort on the part of students who could move rapidly to more advanced skills. It was also easier to assess the prior learning and/or experiences of students coming in with related work experience, educational experience, or military experience. The fourth benefit was that students that have been trained at the college are immediately on a competitive basis with other employees, since their training comes from curricula based on charts developed by industrial representatives. Uses of the DACUM profiles by local industry is a strong indication of their trust and support for the DACUM process.

APPENDIX M

SAMPLE TASK ANALYSIS FORMS

TASK ANALYSIS

ANALYZE EACH VERIFIED TASK TO IDENTIFY:

(1) STEP/ACTIVITIES INVOLVED

(2) RELATED KNOWLEDGE REQUIRED

(3) ATTITUDES INVOLVED

(4) PERFORMANCE STANDARDS

(5) TOOLS AND MATERIALS NEEDED

(6) SAFETY CONCERNS

TASK ANALYSIS FORM A*

Task #___ - ____

In performing this task the ______________________________ will need to:

COMPLETE THESE STEPS	KNOW THE FOLLOWING	EXHIBIT THESE ATTITUDES
1.		

*Use additional pages if needed. Steps should be sequenced in their likely order of occurrence. All knowledge and attitude items should be related to a step statement.

ANALYSIS OF VERIFIED TASK

General Secretaries

Task--Produce business letters

In performing this task, the secretary will need to do the following:

COMPLETE THESE STEPS	KNOW THE FOLLOWING	EXHIBIT THESE ATTITUDES
1. Select appropriate materials	Types of stationery Type styles Number and type of copies needed	
2. Use correct letter format	Business letter parts Business letter styles	
3. Check for correct punctuation and spelling	Punctuation and spelling rules	
4. Edit letter as needed	Editing procedures Grammar	Caring attitude
5. Type letter	Accurate and efficient operation of typewriters	Exhibit concern for quality of finished product
6. Make appropriate corrections	Correction materials Correction procedures	Appreciation for accuracy and neatness
7. Proof completed letter	Proofreading skills	Appreciation for accuracy and neatness

TASK ANALYSIS FORM B

(NOTE: This form has been reduced for illustration purposes.)

DUTY: ____________ ________________________________

TASK: ____________ ________________________________

Steps	Standards (How Well)	Tools and Materials	Safety	Related Knowledge			Attitudes
				Science	Mathematics	Language	

ANALYSIS OF VERIFIED TASK USING FORM B

SECRETARY

DUTY: PREPARE WRITTEN DOCUMENTS

TASK: PREPARE A BUSINESS LETTER

Steps	Standards (How Well)	Tools and Materials	Safety	Related Knowledge			Attitudes
				Science	Mathematics	Language	
1. Decide on letter format	business letter format used					understand business letter format	
2. Select materials	appropriate letterhead appropriate type style	stationery typeheads	avoid paper cuts			type styles	
3. Check draft for spelling, punctuation, and editing	error free					editing skills, grammar, spelling, and punctuation	caring attitude
4. Edit letter as needed		pencil/pen					
5. Type letter	error free	typewriter or word processor		typewriter or word processor			concern for quality
6. Proofread letter							
7. Make corrections or retype		typewriter or word processor		typewriter or word processor			
8. Make final check	error free neat					proofreading skills	appreciation for accuracy and neatness
9. Submit to writer	within reasonable time						

APPENDIX N

SAMPLE DACUM PROFILE CHARTS

- Holland College
- National Center for Research in Vocational Education
- Colorado Curriculum Materials Service
- Durham Technical Institute

NOTE: These sample DACUM charts are included to illustrate the diversity of formats used

ACCOUNTING TECHNOLOGY

Name ____________________

4	C	CAN PERFORM THIS SKILL SATISFACTORILY AND CAN LEAD OTHERS IN PERFORMING IT.
	B	CAN PERFORM THIS SKILL SATISFACTORILY WITH INITIATIVE AND ADAPTABILITY TO SPECIAL PROBLEM SITUATIONS.
	A	CAN PERFORM THIS SKILL SATISFACTORILY WITH MORE THAN ACCEPTABLE SPEED AND QUALITY.
3		CAN PERFORM THIS SKILL SATISFACTORILY WITHOUT ASSISTANCE AND/OR SUPERVISION.
2		CAN PERFORM THIS SKILL SATISFACTORILY BUT REQUIRES PERIODIC ASSISTANCE AND/OR SUPERVISION.
1		CAN PERFORM SOME PARTS OF THIS SKILL SATISFACTORILY BUT REQUIRES ASSISTANCE AND/OR SUPERVISION TO PERFORM THE ENTIRE SKILL.

Ratings on the chart are based on industrial performance standards. They are confirmed by an instructor (a skilled and experienced person from this occupation) who views and evaluates performance as he would in the role of an employer or supervisor.

Instructor ____________________

Date ____________________

A letter of reference attesting to the individual's attendance, punctuality, and work habits, is available from the Registrar's office.

Developed by Holland College in cooperation with business and industry

Prince Edward Island, August, 1980
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holland college

OPERATE ACCOUNTING SYSTEMS	IDENTIFY AND VERIFY SOURCE DOCUMENTS	MAINTAIN VARIOUS BOOKS OF ORIGINAL ENTRY	POST AND BALANCE SUBSIDIARY LEDGERS	POST AND BALANCE GENERAL LEDGER	PREPARE TRIAL BALANCE AND WORKSHEET	PREPARE END OF PERIOD ADJUSTMENTS	PREPARE CLOSING AND POST-CLOSING ENTRIES
	OPERATE ONE-WRITE ACCOUNTING SYSTEMS	MAINTAIN PAYROLL RECORDS	ACCOUNT FOR FIXED ASSET ACQUISITIONS AND DISPOSALS	MAINTAIN SUBSIDIARY RECORDS FOR FIXED ASSETS AND DEPRECIATION	SELECT DEPRECIATION AND DEPLETION BASE METHOD	MAINTAIN PERPETUAL INVENTORY RECORDS	MAINTAIN RETAIL INVENTORY RECORDS
	IDENTIFY COST ACCOUNTING CONCEPTS AND SYSTEMS						
UTILIZE BUSINESS MACHINES AND COMPUTERS	OPERATE OFFICE EQUIPMENT	TYPE VARIOUS STYLES OF LETTERS, FORMS, AND FINANCIAL STATEMENTS	PARTICIPATE IN EVALUATION AND SELECTION OF ACCOUNTING MACHINES	ESTABLISH CONTROLS FOR ACCOUNTING MACHINES	OPERATE ACCOUNTING MACHINES	PROVIDE USER NEEDS FOR SELECTION OF COMPUTER SYSTEM	PARTICIPATE IN COMPUTER SYSTEM IMPLEMENTATION
PARTICIPATE IN MANAGERIAL FUNCTIONS	DEVELOP CHART OF ACCOUNTS	SELECT AND ESTABLISH FILING SYSTEMS	DESIGN FORMS	AID IN IMPLEMENTATION OF SAFEGUARDS FOR ASSETS	EVALUATE STORAGE, DISPOSAL AND SECURITY OF RECORDS	ANALYZE AND MAINTAIN INSURANCE COVERAGE	DEVELOP AND APPLY CREDIT POLICY
	PREPARE AND USE FLOW CHARTS	DEVELOP ACCOUNTING SYSTEMS	ANALYZE UNION CONTRACT PROPOSALS				
PREPARE AND ANALYZE FINANCIAL REPORTS	PREPARE INCOME STATEMENTS	PREPARE BALANCE SHEETS	PREPARE STATEMENT OF CHANGES IN FINANCIAL POSITION	PREPARE NOTES TO FINANCIAL STATEMENTS	PREPARE STATEMENT OF RECEIPTS AND DISBURSEMENTS	PREPARE ANALYSIS OF GENERAL LEDGER ACCOUNTS	PREPARE WORKING PAPER FILE
APPLY BUSINESS MATH	CALCULATE USING FRACTIONS, DECIMALS, AND PERCENTAGES	CALCULATE USING RATIO AND PROPORTIONS	SOLVE PROBLEMS WITH UNKNOWNS	USE SHORT METHODS TO MAKE RAPID CALCULATIONS	CALCULATE SIMPLE AND COMPOUND INTEREST	USE COMPOUND INTEREST AND PRESENT VALUE TABLES	CONSTRUCT GRAPHS
PREPARE GOVERNMENT TAXATION AND INFORMATION RETURNS	CALCULATE AND REMIT PAYROLL DEDUCTIONS	PREPARE RECORD OF EMPLOYMENT	PREPARE WORKERS COMPENSATION FORMS	PREPARE T4, T4A, AND T4F SUPPLEMENTARIES AND SUMMARY	PREPARE T5 SUPPLEMENTARIES AND SUMMARY	UTILIZE PERSONAL INCOME TAX GUIDES	PREPARE T - 1 RETURNS
IDENTIFY BUSINESS LAW	IDENTIFY CHARACTERISTICS OF SOLE PROPRIETORSHIPS	IDENTIFY CHARACTERISTICS OF PARTNERSHIPS	IDENTIFY CHARACTERISTICS OF CORPORATIONS	IDENTIFY CHARACTERISTICS OF AN AGENCY RELATIONSHIP	IDENTIFY NEGOTIABLE INSTRUMENTS	IDENTIFY LEGAL CHARACTERISTICS OF CONTRACT FORMATION	IDENTIFY METHODS TO DISCHARGE CONTRACTS
APPLY ECONOMICS TO BUSINESS DECISIONS	ANALYZE FORCES OF SUPPLY AND DEMAND	EVALUATE THE EFFECT OF COMPETITION	IDENTIFY EFFECTS OF GOVERNMENT MONETARY AND FISCAL POLICIES	ANALYZE BUSINESS CYCLES	EVALUATE BUSINESS GROWTH	IDENTIFY COMPOSITION OF G. N. P.	
COMMUNICATE INFORMATION	PREPARE WRITTEN COMMUNICATION	INTERPRET WRITTEN COMMUNICATION	LISTEN EFFECTIVELY	COMMUNICATE BY TELEPHONE	PREPARE AND DICTATE BUSINESS CORRESPONDENCE	PRESENT REPORTS ORALLY	PREPARE AND IMPART TECHNICAL INFORMATION
DEVELOP AND APPLY HUMAN RELATION SKILLS	PROJECT IMAGE OF ROLE THROUGH DRESS, GROOMING, POSTURE AND HYGIENE	DEMONSTRATE PUNCTUALITY	SCHEDULE AND USE TIME EFFECTIVELY	WORK EFFECTIVELY WITH OTHERS	RECOGNIZE AND INTERPRET PERSONAL AND UNUSUAL BEHAVIOR	ESTABLISH CUSTOMER RELATIONSHIP	RECORD AND HANDLE COMPLAINTS

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PREPARE BANK RECONCILIATION	OPERATE IMPREST FUNDS	CALCULATE AND POST INTEREST CHARGES TO ACCOUNTS RECEIVABLE	RECORD DOUBTFUL ACCOUNTS, WRITE-OFFS AND RECOVERIES	ACCOUNT FOR NOTES RECEIVABLE/ PAYABLE	CALCULATE AND RECORD PREPAIDS	CALCULATE AND RECORD ACCRUALS	UTILIZE OPEN INVOICE SYSTEM FOR ACCOUNTS PAYABLE	MAINTAIN VOUCHER SYSTEM FOR ACCOUNTS PAYABLE	RECONCILE ACCOUNTS PAYABLE	PREPARE ACCOUNTS RECEIVABLE/ PAYABLE AGING ANALYSIS
ORGANIZE PHYSICAL INVENTORY COUNT	DETERMINE INVENTORY VALUATION	IDENTIFY AND RECORD INTANGIBLE ASSETS	ACCOUNT FOR LONG-TERM INVESTMENTS	ACCOUNT FOR LONG-TERM LIABILITIES	ACCOUNT FOR PROPRIETORSHIP AND PARTNERSHIP CAPITAL ACCOUNTS	ACCOUNT FOR SHAREHOLDERS EQUITY ACCOUNTS	ALLOCATE INCOME AND EXPENSES TO DEPARTMENTS	ACCOUNT FOR PRIOR PERIOD ADJUSTMENTS	ACCOUNT FOR EXTRAORDINARY ITEMS	MAINTAIN BRANCH ACCOUNTING RECORDS

ASSIST IN AND MONITOR PREPARATION OF COMPUTER PROGRAMS	ESTABLISH INPUT/OUTPUT CONTROLS	CODE AND PREPARE ACCOUNTING DATA FOR COMPUTER INPUT	READ AND INTERPRET COMPUTER PRINT-OUTS	OPERATE E. D. P. INPUT/OUTPUT EQUIPMENT						
ANALYZE AND EVALUATE SOURCES OF FINANCING	PREPARE AND USE ORGANIZATION CHARTS	PREPARE JOB DESCRIPTIONS	PLAN AND ORGANIZE RECRUITMENT OF EMPLOYEES	CONDUCT EMPLOYEE ORIENTATION	ASSIGN AND REASSIGN PERSONNEL TO APPROPRIATE POSITIONS	SUPERVISE STAFF	EVALUATE EMPLOYEE PERFORMANCE	ORGANIZE AND CONDUCT TRAINING SESSIONS	DESIGN EMPLOYEE INCENTIVE PROGRAMS	APPLY DECISION MAKING TECHNIQUES TO PROBLEM SOLVING

PREPARE OPERATING BUDGETS	PREPARE CASH FLOW FORECASTS	PREPARE CAPITAL BUDGETS	PREPARE STATEMENTS FROM LIMITED INFORMATION	PREPARE AND INTERPRET ANALYSIS OF INCOME STATEMENTS	PREPARE AND INTERPRET ANALYSIS OF BALANCE SHEET	PREPARE BREAK-EVEN ANALYSIS	
CALCULATE USING METRIC UNITS	UTILIZE ERROR DETECTION TECHNIQUES						
CALCULATE AND REMIT TAX INSTALLMENTS	PREPARE CAPITAL COST ALLOWANCE SCHEDULES	INTERPRET PROVINCIAL SALES TAX REGULATIONS	PREPARE FEDERAL GOVERNMENT INFORMATION FORMS	PREPARE CHARITABLE TRUST REPORTS	INTERPRET AND APPLY FEDERAL SALES TAX LAWS	GATHER AND ASSEMBLE DATA FOR T-2 TAX RETURNS	APPLY REGULATIONS FOR DISPOSAL OF ACCOUNTING RECORDS
INTERPRET AND APPLY THE SALE OF GOODS ACT	INTERPRET AND APPLY LABOUR ACT	INTERPRET AND APPLY HUMAN RIGHTS LEGISLATION	IDENTIFY AND APPLY MECHANICS LEINS	IDENTIFY TORTS AND NEGLIGENCE IN BUSINESS	IDENTIFY THE STATUTE OF LIMITATIONS	IDENTIFY LEGAL IMPLICATIONS OF BANKRUPTCY	

CONVENE AND CHAIR MEETINGS	TAKE MINUTES AT MEETINGS	CONDUCT RESEARCH AND GATHER DATA	CONDENSE AND SUMMARIZE DATA	PREPARE RESUME	PREPARE APPLICATION FOR EMPLOYMENT	PARTICIPATE IN JOB INTERVIEW
MAINTAIN CONFIDENTIALITY OF INFORMATION	APPLY BUSINESS ETHICS					

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VOCATIONAL TEACHER COMPETENCY PROFILE

Name ______________________ Address ______________________

Institution ______________________ Date Started ______________________

Resource Person(s) ______________________

COMPETENCY RATING SCALE

1. **Poor:**	The teacher is unable to perform this skill or has only very limited ability to perform it.	3. **Good:**	The teacher is able to perform this skill in an effective manner.
2. **Fair:**	The teacher is unable to perform this skill in an acceptable manner but has some ability to perform it.	4. **Excellent:**	The teacher is able to perform this skill in a very effective manner.

Category ← **Competencies** →

A	Program Planning, Development, and Evaluation (11 modules)	A 1 Prepare for a Community Survey	A 2 Conduct a Community Survey	A 3 Report the Findings of a Community Survey	A 4 Organize an Occupational Advisory Committee	A 5 Maintain an Occupational Advisory Committee	A 6 Develop Program Goals and Objectives	A 7 Conduct an Occupational Analysis	A 8 Develop a Course of Study	A 9 Develop Long-Range Program Plans	A 10 Conduct a Student Follow-Up Study	A 11 Evaluate Your Vocational Program
B	Instructional Planning (6 modules)	B 1 Determine Needs and Interests of Students	B 2 Develop Student Performance Objectives	B 3 Develop a Unit of Instruction	B 4 Develop a Lesson Plan	B 5 Select Student Instructional Materials	B 6 Prepare Teacher-Made Instructional Materials					
C	Instructional Execution (29 modules)	C 1 Direct Field Trips	C 2 Conduct Group Discussions, Panel Discussions, and Symposiums	C 3 Employ Brainstorming, Buzz Group, and Question Box Techniques	C 4 Direct Students in Instructing Other Students	C 5 Employ Simulation Techniques	C 6 Guide Student Study	C 7 Direct Student Laboratory Experience	C 8 Direct Students in Applying Problem-Solving Techniques	C 9 Employ the Project Method	C 10 Introduce a Lesson	C 11 Summarize a Lesson
	Instructional Execution (Cont'd)	C 12 Employ Oral Questioning Techniques	C 13 Employ Reinforcement Techniques	C 14 Provide Instruction for Slower and More Capable Learners	C 15 Present an Illustrated Talk	C 16 Demonstrate a Manipulative Skill	C 17 Demonstrate a Concept or Principle	C 18 Individualize Instruction	C 19 Employ the Team Teaching Approach	C 20 Use Subject Matter Experts to Present Information	C 21 Prepare Bulletin Boards and Exhibits	C 22 Present Information with Models, Real Objects, and Flannel Boards
	Instructional Execution (Cont'd)	C 23 Present Information with Overhead and Opaque Materials	C 24 Present Information with Filmstrips and Slides	C 25 Present Information with Films	C 26 Present Information with Audio Recordings	C 27 Present Information with Televised and Videotaped Materials	C 28 Employ Programmed Instruction	C 29 Present Information with the Chalkboard and Flip Chart				
D	Instructional Evaluation (6 modules)	D 1 Establish Student Performance Criteria	D 2 Assess Student Performance: Knowledge	D 3 Assess Student Performance: Attitudes	D 4 Assess Student Performance: Skills	D 5 Determine Student Grades	D 6 Evaluate Your Instructional Effectiveness					
E	Instructional Management (9 modules)	E 1 Project Instructional Resource Needs	E 2 Manage Your Budgeting and Reporting Responsibilities	E 3 Arrange for Improvement of Your Vocational Facilities	E 4 Maintain a Filing System	E 5 Provide for Student Safety	E 6 Provide for the First Aid Needs of Students	E 7 Assist Students in Developing Self-Discipline	E 8 Organize the Vocational Laboratory	E 9 Manage the Vocational Laboratory		
F	Guidance (5 modules)	F 1 Gather Student Data Using Formal Data-Collection Techniques	F 2 Gather Student Data through Personal Contacts	F 3 Use Conferences to Help Meet Student Needs	F 4 Provide Information on Educational and Career Opportunities	F 5 Assist Students in Applying for Employment or Further Education						
G	School-Community Relations (10 modules)	G 1 Develop a School-Community Relations Plan for Your Vocational Program	G 2 Give Presentations to Promote Your Vocational Program	G 3 Develop Brochures to Promote Your Vocational Program	G 4 Prepare Displays to Promote Your Vocational Program	G 5 Prepare News Releases and Articles Concerning Your Vocational Program	G 6 Arrange for Television and Radio Presentations Concerning Your Vocational Program	G 7 Conduct an Open House	G 8 Work with Members of the Community	G 9 Work with State and Local Educators	G 10 Obtain Feedback about Your Vocational Program	
H	Student Vocational Organization (6 modules)	H 1 Develop a Personal Philosophy Concerning Student Vocational Organizations	H 2 Establish a Student Vocational Organization	H 3 Prepare Student Vocational Organization Members for Leadership Roles	H 4 Assist Students in Developing and Financing a Yearly Program of Activities	H 5 Supervise Activities of the Student Vocational Organization	H 6 Guide Participation in Student Vocational Organization Contests					
I	Professional Role and Development (8 modules)	I 1 Keep Up-to-Date Professionally	I 2 Serve Your Teaching Profession	I 3 Develop an Active Personal Philosophy of Education	I 4 Serve the School and Community	I 5 Obtain a Suitable Teaching Position	I 6 Provide Laboratory Experiences for Prospective Teachers	I 7 Plan the Student Teaching Experience	I 8 Supervise Student Teachers			
J	Coordination of Cooperative Education (10 Modules)	[illegible] Guide [illegible]	J 2 Manage the Attendance, Transfers, and Terminations of Co-Op Students	J 3 Enroll Students in Your Co-Op Program	J 4 Secure Training Stations for Your Co-Op Program	J 5 Place Co-Op Students on the Job	J 6 Develop the Training Ability of On-the-Job Instructors	J 7 Coordinate On-the-Job Instruction	J 8 Evaluate Co-Op Students' On-the-Job Performance	J 9 Prepare for Students' Related Instruction	J 10 Supervise an Employer-Employee Appreciation Event	

LEGAL ASSISTANT

DUTIES	TASKS													
Assist Clients	Establish Firm/Client Rapport	Record Interview Data	Gather Information	Analyze Information	Inventory Assets and Liabilities	Assist in Establishing Record Keeping Procedures for Clients	Monitor Contacts for Effective Use of Attorney Time							
Perform Communications Functions	Make Phone Calls	Arrange for Appointments and Meetings	Coordinate Meetings and Conferences	Consult with Officers of the Court	Consult with Administrative Agencies	Consult with Resource Persons	Draft Correspondence	Prepare Correspondence	Draft Memoranda	Write Memoranda	Employ Public Relations Techniques	Act as Inter-office Personnel Liaison	Keep Clients Informed	
Implement Legal Procedures	Obtain Signatures	Perform Notary Services	File Pleadings and/or Documents	Lodge Pleadings and/or Documents	Record Instruments and/or Documents	Give Notices	Monitor Services of Process	Set Hearing and/or Trial Dates	Obtain Issuance of Documents					
Perform Investigative Functions	Obtain Reports	Conduct Non-legal Research	Gather Physical Evidence	Locate Persons	Locate Properties	Interview Witnesses	Check Accuracy and Consistency of Information	Verify Assets and Liabilities	Obtain Valuation of Assets and Liabilities	Assist with Depositions	Digest Materials	Classify Materials		
Perform Legal Research	Retrieve Previously Researched Information	Use Library and Other Relevant Resources	Locate Relevant Statutory Law	Locate Relevant Administrative Law	Locate Relevant Municipal Ordinances	Locate Relevant Legislative Histories	Locate Relevant Case Law	Shepardize Cases and Statutes	Digest Materials	Classify Materials	Draft Memoranda	Prepare Memoranda	Draft Briefs	Prepare Briefs
Prepare Instruments and Documents	Research Form Files	Compile and Compute Data	Draft Instruments	Prepare Instruments	Draft Pleadings	Prepare Pleadings	Draft Documents	Prepare Documents	Check Drafts for Modification	Make Revisions of Documents	Complete Prepared Forms	Proofread Written Materials		
Assist with Judicial and Administrative Appearances	Prepare Trial Notebooks	Prepare Case Law Notebooks	Organize Files	Schedule Witnesses	Subpoena Witnesses	Maintain Exhibit Indexes	Maintain Checklist of Subpoenaed Items	Prepare Visual Aids	Prepare Demonstrative Evidence	Take Extensive Notes	Perform Emergency Research	Acquaint Witnesses or Clients with Court Procedures	Assemble and Transport Pertinent Materials	Open Informal Court Proceedings for Estates
Complete Client Projects	Conduct Real Estate Closings	Transfer Assets	Close Estates	Assist in Pursuit of Post-Trial Remedies	Complete Post-Trial Wrap-ups	Collect and Return Exhibits	Prepare Withdrawals as Attorney of Record	Close Client Files						
Continue Education	Participate in Educational Courses and Programs	Participate in Seminars, Conferences and Workshops	Complete Required Readings	Read Current Publications	Interact with Other Professionals	Participate in Professional Organizations	Participate in Legal Assistance Projects							
Coordinate Office Functions	Open Client Files	Maintain Office Equipment	Arrange for Maintenance of Office Equipment	Maintain Time Records	Update Library Materials	Maintain Form Files	Maintain Filing Systems	Maintain Inventory Controls	Maintain Calendar Controls	Categorize Client Records	Screen Office Contacts	Prepare Client Billings	Maintain Office Accounting	Maintain Research Files
	Develop Legal Procedures Handbook	Monitor Legal Procedures Handbook	Prepare In-office Memos	Recruit Potential Employees	Interview Potential Employees	Orient New Staff to Office Procedures	Train Non-legal Personnel	Supervise Non-legal Personnel	Assist in the Evaluation of Personnel					

Adapted from DACUM Analysis Conducted for
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DRAFTING SKILL PROFILE

	Duties	Competencies												
A	Conduct Field Work and Make Preliminary Presentations	A-1 Take Measurements	A-2 Determine Site Orientation	A-3 Make Site Inspections of Work being done	A-4 Use Surveying Techniques	A-5 Develop Working Sketches	A-6 Prepare Rough Sketches	A-7 Prepare Preliminary Drawings	A-8 Make Models	A-9 Prepare Presentation Drawings				
B	Prepare Final Drawings	B-1 Determine Type and Size of Medium	B-2 Prepare Surface for Drawing (Pounce)	B-3 Determine Details to be Shown (Isometric Auxiliary)	B-4 Layout Drawings	B-5 Apply Basic Principles and Practices Pertaining to Drafting Specialty	B-6 Select and Use Appropriate Line Weights	B-7 Draw Detail Views	B-8 Apply Dimensions	B-9 Apply Symbols	B-10 Use Correct Lettering Techniques	B-11 Add Schedules or Bill of Materials	B-12 Add Nomenclature	B-13 Apply Crosshatching (Poché)
	Prepare Final Drawings (cont'd)	B-14 Make Assembly Drawings (Isometric)	B-15 Make Perspective Drawings	B-16 Make Tracings	B-17 Check Drawings for Completeness and Accuracy									
C	Communicate With Others	C-1 Consult With Peers	C-2 Consult With Clients	C-3 Consult With Craftspersons and Technicians	C-4 Communicate With Supervising Personnel	C-5 Communicate With Subcontractors and Vendors	C-6 Provide Verbal Interpretation of Drawings	C-7 Use Active Listening Skills	C-8 Ask Clarifying Questions	C-9 Respond Directly to Questions	C-10 Use Standard Terminology	C-11 Exhibit Professional Attitudes		
D	Use Reference Materials	D-1 Use French's and Svenson's References	D-2 Use Architectural Graphics Standards	D-3 Use Sweet's Catalog	D-4 Follow Company Standards	D-5 Conduct Library Research	D-6 Use Handbooks (Machines, etc.)	D-7 Use Manufacturer's Drawings and Specifications	D-8 Use Local, State and Federal Building Codes and Regulations	D-9 Abide by Military Specifications	D-10 Use Trade Publications	D-11 Read Blueprints	D-12 Read Topographical Maps	
E	Make Mathematical Calculations	E-1 Convert Inches to Metrics	E-2 Convert Fractions to Decimals	E-3 Make Geometric Calculations	E-4 Make Trigonomic Calculations	E-5 Apply Basic Principles of Physics	E-6 Make Engineering Calculations							
F	Prepare Written Documents	F-1 Develop Written Instructions or Specifications	F-2 Generate Job Orders or Worksheets	F-3 Write Change Orders	F-4 Submit Requisitions for Services	F-5 Submit Requisitions for Services	F-6 Develop Inputs for Contracts	F-7 Prepare Memos and Letters						
G	Check Drawings	G-1 Check Accuracy of Dimensions and Scale	G-2 Check Coordination of Prints	G-3 Check Revisions	G-4 Check for Completeness	G-5 Check Line Quality	G-6 Verify Compliance with Standards (Drafting and Company)	G-7 Verify Compliance with Building Codes and Regulations	G-8 Check Clarity of Notes					
H	Reproduce Drawings	H-1 Select Type of Reproduction	H-2 Make Copies of Drawings	H-3 Make Copies of Blueprints	H-4 Make Reproductions of Blueprints	H-5 Make Photographic Reproductions								
I	Maintain Document Storage	I-1 File Masters	I-2 File Media Materials	I-3 Retrieve Media and Masters	I-4 Maintain File of Revisions	I-5 Maintain Drawing Log (Notebook or Index File)								
J	Continue Education	J-1 Inservice Education Classes and Seminars	J-2 Study Trade Publications	J-3 Trade Societies	J-4 Study Job Related Books	J-5 Participate in Trade Shows and Exhibits	J-6 Participate in On-the-Job Training	J-7 Visit Job Related Industries	J-8 Keep Abreast of New Technological Developments					

**Adapted from DACUM Analysis
done by
DURHAM TECHNICAL INSTITUTE**

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